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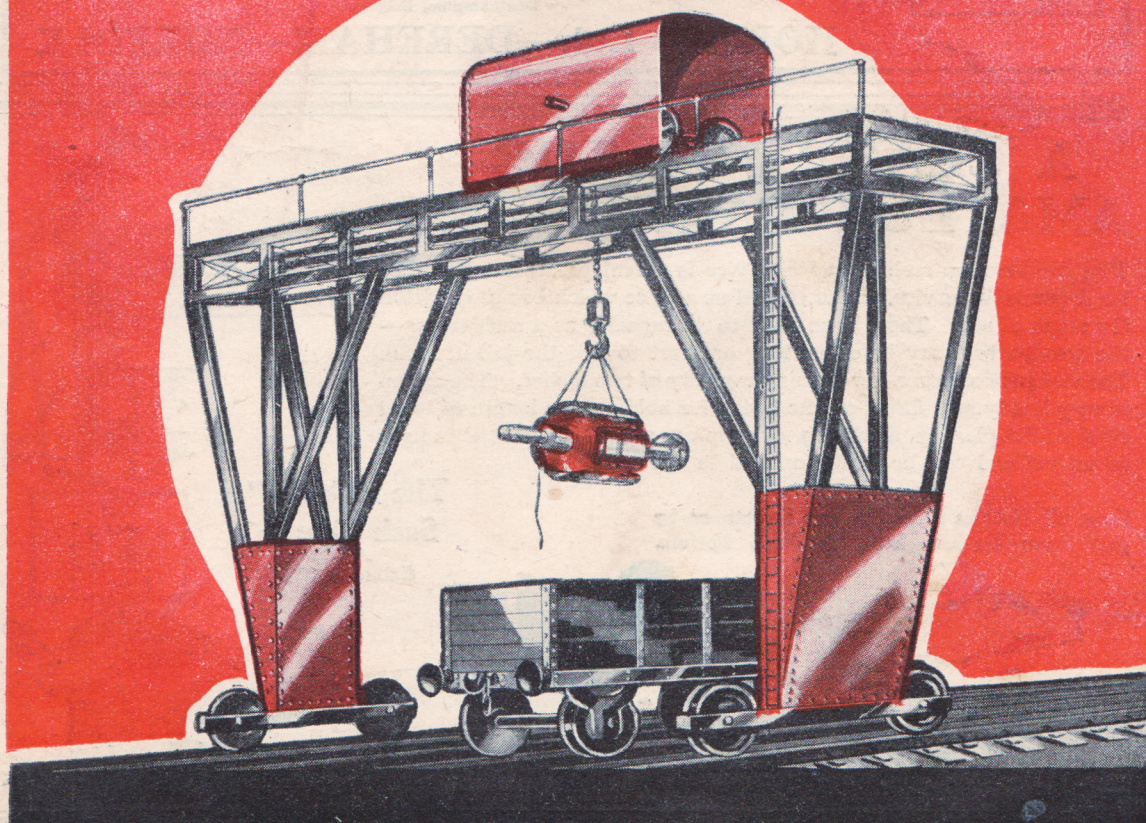
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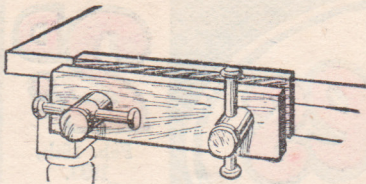
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MAKING A MODEL CRANE FOR YOUR MODEL RAILWAY



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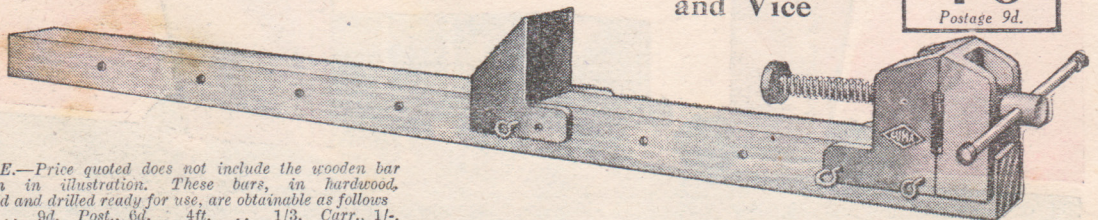
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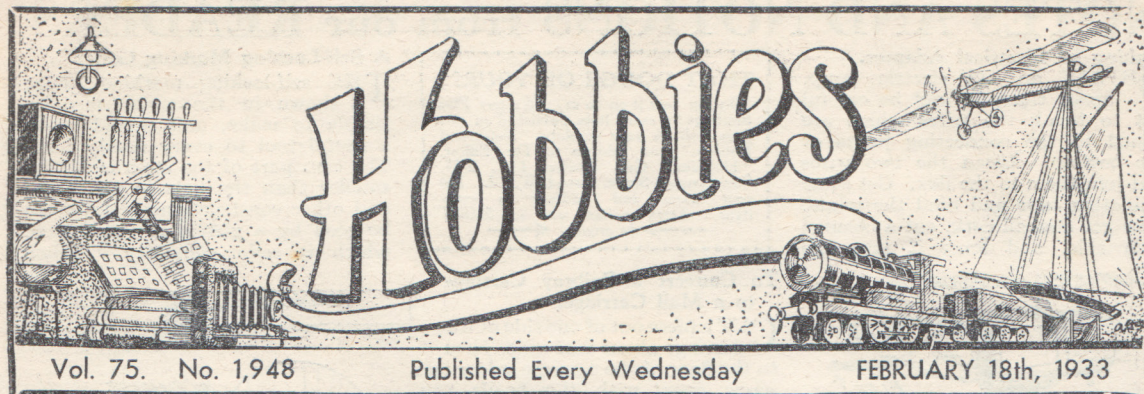


NOTE.—Price quoted does not include the wooden bar shown in illustration. These bars, in hardwood, planed and drilled ready for use, are obtainable as follows
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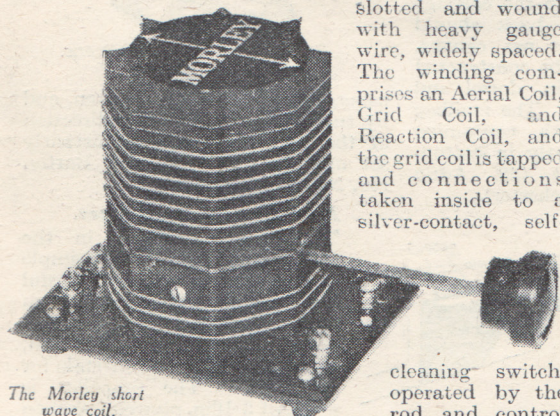
NEXT WEEK! DESIGN SHEET FOR A MODEL FIRE ENGINE



THIS WEEK'S CLEVER IDEAS

Morley Short-wave Coils.

THE Morley is a very interesting model of short-wave coil, designed to cover the wave-band from 12 to 70 metres with a .00025 mfd. tuning-condenser. An eight-ribbed former is used for the coil, and this is slotted and wound with heavy gauge wire, widely spaced. The winding comprises an Aerial Coil, Grid Coil, and Reaction Coil, and the grid coil is tapped and connections taken inside to a silver-contact, self-



The Morley short wave coil.

cleaning switch, operated by the rod and control knob on the panel. Terminals are provided on the ebonite base for connection, so that the complete coil may be conveniently fitted into an existing set. The two wave-bands covered by the coil are from 12 to 30 metres and from 28 to 70 metres, and the size and position of the aerial coil has been so chosen that it gives a satisfactory coupling on both bands. The price of this coil is 6s. 9d., at which it represents very good value. This firm also manufactures a series of ganged and screened coils, which differ from others on the market in that the screening-can has a domed top. The most interesting of this range is a pair of Three Range (Ultra-Short, Medium, and Long-Waves) Coil, consisting of the short-wave coil above mentioned, together with a standard dual-range coil, both mounted on a single base. The switch knob is adjusted to cover the three bands. The price of this is 15s. complete, and the base is 7 1/2 in. by 3 in.

Rubber-driven Child's Car.

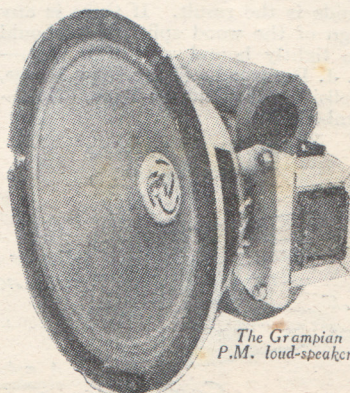
EVERY reader knows that twisted elastic is almost universally employed to drive model aeroplanes and certain model boats. It has also been used to drive toy motor cars, but a child's car recently marketed

in America (the type of car which the child normally propels by pedals) is driven by several skeins of elastic, geared together and also to the back axle. It is, of course, silent.

Grampian Speakers.

A NEW Permanent Magnet Moving-Coil Speaker has recently been placed on the market, and is illustrated below. This is the Grampian speaker, manufactured by Grampian Reproducers Ltd., and selling at 39s. 6d. This has an overall diameter of 7 1/2 in. and weighs 5 1/2 lbs. The chassis is built up of aluminium, and the magnet is very substantial. The strength of the field is 34,000 lines, and the speech coil is wound to a resistance of 1.7 ohms. To enable this to be employed with any type of valve, a multi-ratio out-put is fitted to the chassis and six different ratios are obtainable from the four terminals which are fitted to the transformer. The lowest ratio is 15 to 1, and the highest 70 to 1. The power handling capacity is given as 3,750 milliwatts, and it will, therefore, deal comfortably with the output of practically every home receiver. On test, speech was found remarkably faithful, no lack of brilliance being noticed, and no boominess. On musical items the overall response seemed particularly good, with a good proportion of bass. This was found to be produced by a bass resonance below 100 cycles, which gave a depth to the reproduction without noticeable boom. At the price mentioned, namely 39s. 6d., this is a very satisfactory item.

An energized model is also made by this firm, and sells at 30s. The principal details of this model are: Field winding, 2,500 ohms; Inductance of field 70 henries; Power handling capacity 3,750 milliwatts; Speech coil resistance 1.7 ohms; weight 4lbs. 10ozs. A similar output transformer is also fitted to this model.



The Grampian P.M. loud-speaker.

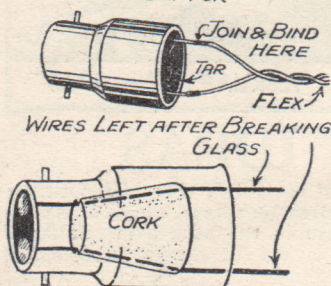
The address of the manufacturers of items mentioned on this page can be obtained on application to the Editor.

NOTES AND NOTIONS from our READERS

Making an Electrical Adaptor.

OBTAIN an old electric lamp, break the glass and be careful not to break the wires which are joined to the connecting joints at the bottom. Clean the two wires and join them to the flex. Get some insulating tape and bind the joints. Now get a small cork, cut a channel each side, and force it into the

COMPLETED ADAPTOR

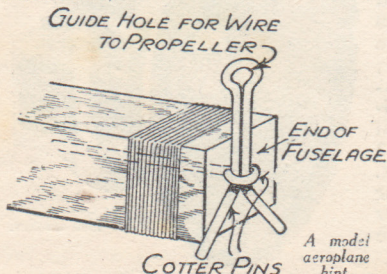


Making an electrical adaptor.

adaptor, the wires fitting into the channels. Having done this, fill the rest of the space up with some tar or pitch flush with the edge, and then you have a genuine adaptor. (See sketch.).—H. E. Kreeger (12B, Peabody Buildings, Glasshouse St., London Docks, E.1).

A Guide for a Model Aeroplane Propeller.

MODEL aeroplane enthusiasts often find a difficulty in fixing a guide for the propeller shaft to an ordinary stick fuselage on an elastic-driven plane. This difficulty may be overcome by getting two small cotter pins and hammering one gently into the end of the fuselage so that only the eye shows. If the other cotter pin is pushed through the eye of the first and the ends bent slightly outwards a firm guide is the result. If there is any sign of the wood splitting it should be tightly bound with thin wire.—S. J. Dunwoodie (Tyne View House, Fellside, Hexham-on-Tyne, Northumberland).

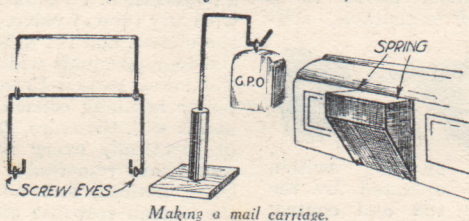


THAT DODGE OF YOURS?

Why not pass it on to us? We pay Five Shillings for every item published on this page. Mark your envelope "Notes and Notions," and address to The Editor, "Hobbies," Geo. Newnes, Ltd., 8-11, Southampton Street, Strand, W.C.2. Put your name and address on every item. **Every notion sent in MUST be original**

To Convert a Railway Carriage to a Mail Carriage.

CUT a piece out of one side of the carriage about 2in. wide. Then to the floor of the carriage solder two screw eyes, with the heads projecting vertically over the side. Make up the wire framework as in the diagram from strong wire. The back corner of the top frame should be connected to the carriage roof by a piece of string as shown, and another piece of string tied diagonally from the top corner at the front across the top to the carriage roof. The side and back should be covered with fine net canvas. The standard should be constructed out of a piece of 3/4in. dowel and strong wire as shown. The mailbag can be made of cloth, containing lead shot packed tightly in cotton-wool.—H. Cartwright (39, Adria Road, Didsbury Manchester).



This Week's Mental Nut No. 56.

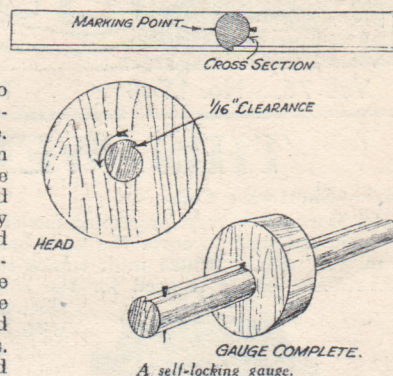
THREE books will be awarded each week for the first correct solutions opened. Mark your envelope "Mental Nut" No. 56. **A** MAN left instructions to his executors to distribute once a year exactly 55s. among the poor of his parish, but they were only to continue the gift so long as they could give it in different ways, always giving 1s. 6d. each to a number of women and 2s. 6d. each to men. During how many years could the charity be administered? Of course, by "different ways" is meant a different number of men and women every time.

Answer to Last Week's Problem.

THE cyclist rode away with a bicycle that cost the salesman £11, and the £10 "change." He thus made off with £21, in exchange for a worthless piece of paper. This is the exact amount of the salesman's loss, and the other operations of changing the cheque and borrowing from a friend do not affect the question in the slightest.

A Self-Locking Marking Gauge.

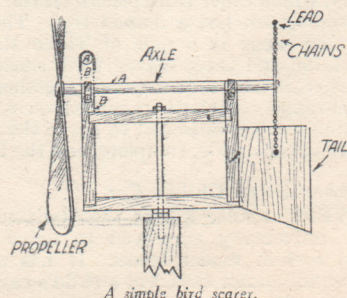
THE self-locking marking gauge shown in the sketch is quite simple to make, and should prove a useful tool to every handy man. The cam part of the stem is 1/16in. smaller than the hole in the head, and other constructional details can be seen by a glance at the sketch, which is self-explanatory. When

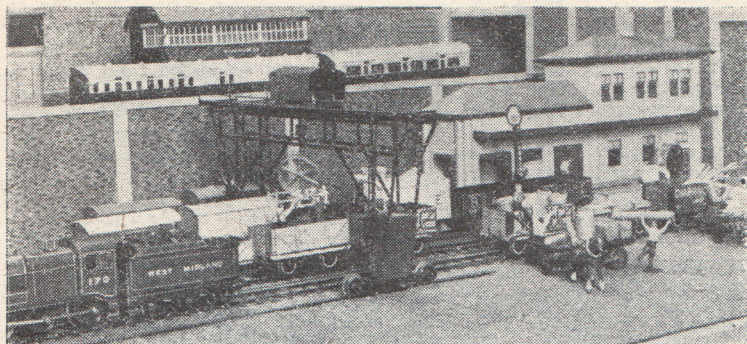


using, the measurement is taken, and by turning the stem in the direction of the arm the gauge is instantly set and does not slip.—P. Barton (68, Northway, Lewes).

An Ingenious Bird-Scarer.

THE device shown in the sketch below is very simple to make and is extremely useful for keeping birds away from freshly-planted seeds. The frame is constructed of 1in. square deal, with a length of broom stake for the axle. The propeller is made of 3/16in. plywood, shaped and twisted, and then nailed on the axle. On the other end is a circle of plywood with short lengths of chains attached to it. Then the tail is attached so that chains strike it, making a considerable noise and scaring the birds away.—E. Mitchell (16, David Road, Coventry, Warwickshire).





A photograph of the model crane, showing the completeness of the model railway layout.

A MODEL GOODS YARD GOLIATH CRANE

By "The Padre"

A Useful Accessory for a Model
(00-Gauge) Railway.

THE drawing and the two photographs depict a model Goliath crane, forming part of the equipment at Laurenceton Yard on the West Midland (00-gauge) Railway. The photos give the north and south aspects of the yard and crane, and also some idea of the degree of completeness attained on this model layout, the work and property of the writer. A number of wagon types built from the Merco series of litho wagon papers, and including Wood and Co., Brentnall and Cleland, and several varieties of L.M.S. wagons, are also shown. Part of the high-level main line passenger depot may also be seen.

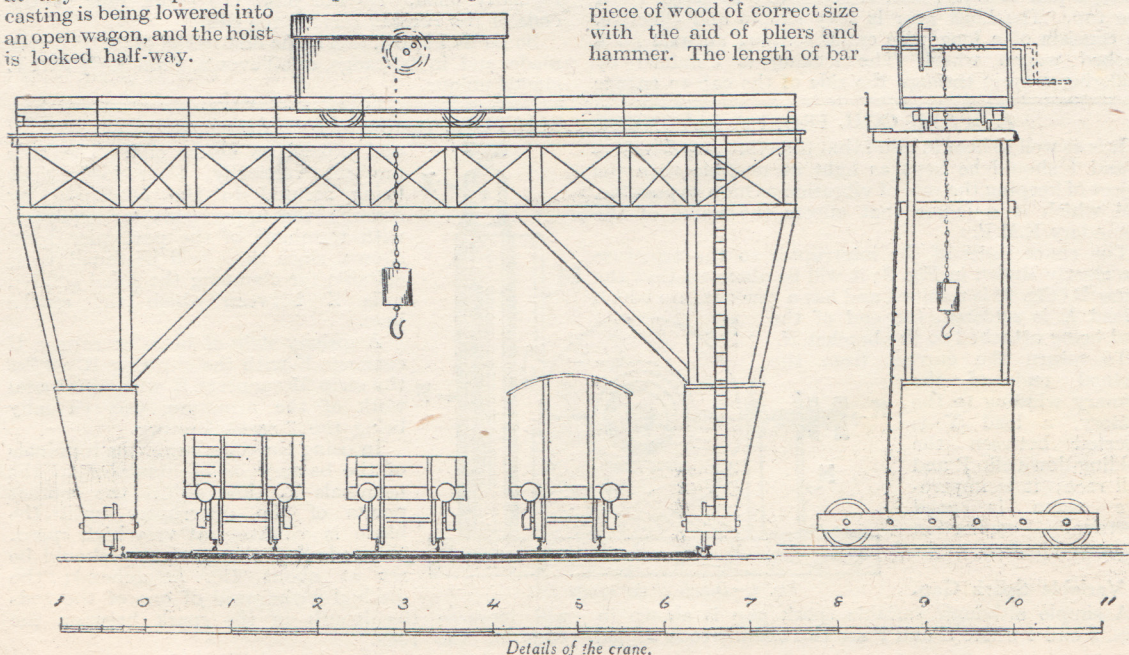
Our task, however, is not to linger on these details, but to describe the travelling crane. It is a dummy model, in the sense that it is not fitted with an electric mechanism; but it is complete with all the three necessary movements, which depend, of course, upon manual operation. It can be moved sweetly along the travelling rails; it can operate laterally by means of the travelling cab, and the hoist is worked by a crank, having an arrangement which provides for the locking of the gear at any desired point. In the picture a large wheel casting is being lowered into an open wagon, and the hoist is locked half-way.

The Sides.

The drawing shows the construction, which is very straightforward. The material employed was 00-gauge brass rail and fine garden wire, with cardboard and tinplate for given purposes. Set about the task by drawing a sketch on cardboard of one side of the gantry. Use a set square and ruler. Then cut your pieces of rail for one side. Lay out the uprights on the drawing. The outer members are shaped with pliers as required. Now take the upper horizontals and solder them in place, using an electric iron, if possible. Then turn over the side and set in the short uprights and the diagonals. Use fine wire for the lattice if this is included.

This having been done, repeat the process for the other side, making this exactly the same. Now cut the short side members and set them in place with solder, doing one at the top and one at the bottom at each end first. Next trim the structure, seeing that it stands perfectly vertical.

The running gear is formed of birdcage punchbar, which is apparently of white metal, and has regular holes at every half-inch. The bar is bent around a piece of wood of correct size with the aid of pliers and hammer. The length of bar



is joined half-way on the outside, as indicated. The wheels I used were four odd ones I happened to possess, a little larger than 00-gauge. But the latter will serve. Solder these on their axles and washer them in the centre before finally assembling the gear. The flanges are on the inner side. For washers I used some spare sockets off a commercial fall-pipe sold for 0-gauge. Now solder the gear on to the crane. Here again great care is needed to get the gear square and symmetrical. Next, around the base of each leg, form a cardboard box to shape, using over the card some adhesive tape. Fill in the bottom of these boxes and load them dead full of lead shot, afterwards fitting the lids in place with glue. This serves to keep the mechanism on the tracks.

The Upper Gangway and Handrail.

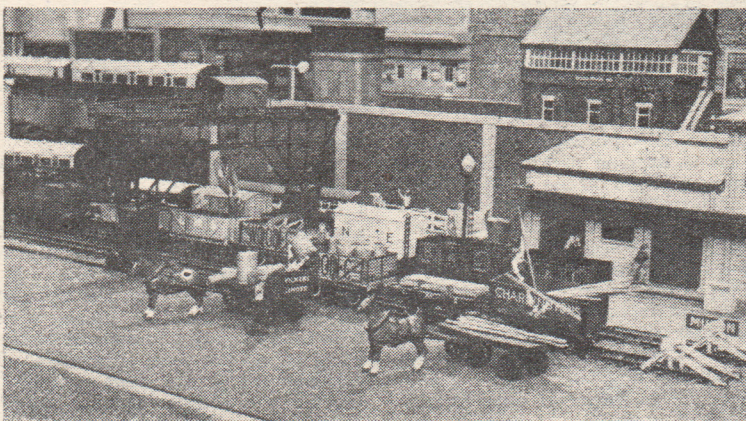
These were made from a length of $\frac{1}{4}$ in. tinfoil strip, fairly stout in gauge, soldered on the two extended bearers. The rails were done in thin wire with the aid of pins for the up-rights. Use a piece of 3-16 in. strip-wood to slip between the rails while soldering. The ladder I have so often described that I will refrain this time.

The hoist cab was mounted on a Stewart-Reidpath passenger bogie inverted. The tinfoil roof and sides were made in one piece, and soldered to the bogie, coming well down over the axle-boxes. The cab runs along a pair of rails soldered accurately to gauge along the top. The hoist gear is very simple and effective. It consists of a long wire crank forming an axle for a spoked wagon wheel. The locking is obtained by soldering a sprig through the side of the cab to engage

the wheel between the spokes when the crank is slipped along through its bearers. A blob of solder on the outside end of the crankshaft will serve to retain the crank in position, so that it cannot be pulled right out. A fine ship's chain (20 links to the inch) is used for the hoist, and the weight was a cylindrical block of lead taken off a discarded Bing 00-gauge pony truck. The hook was a piece of bent wire. The other end of the chain is soldered to the crankshaft.

The Track.

The track on which the crane runs is made from



Another view of the model crane.

ordinary rail, but so arranged as to form an "inside groove" runway, two rails being used for each side. These rails are set exactly to suit the gauge of the crane, being soldered to long strips of machine-cut tinplate for sleepers. The heavy black line represents the bituminous roofing-felt which serves to conceal these ugly sleepers, leaving only the rails exposed. On the top of this felt

the wagon tracks beneath the crane are laid. The outer ends of the long sleepers are covered with the large pieces of felt serving to cover the baseboard.

Paint the crane dead black oil colours. I used red oxide for the handrails and ladder, dark grey for the cab sides, black for roof. The wheels need to be kept regularly oiled. Do not omit the check rails at the ends of the runway serving the cab.

So far as I know, this is the first model of its type ever made, and in 00-gauge, at all events, I am fairly sure it stands unique.

A SPARK COIL FROM A MAGNETO ARMATURE (continued from facing page).

It is as well to bear in mind that the vibrating members S and I should be kept as light as possible with the object of keeping the rate of vibration as high as possible, and which is a factor that effects the value of the Secondary E.M.F.

The connections of the interrupter to the armature are clearly shown in Fig. 3; it will be observed that the screw B (Fig. 1) is retained and has a saw-cut into which a lead X is soldered, the end of the lead being attached to the bracket N.

To return the current from the earthed end of the primary winding to the battery, a lead Y is inserted between the holding-down clip P and ball race; it is imperative there is good electrical connection between the two.

A Variable Spark Gap.

A simple although variable spark gap is shown in Figs. 3 and 4 where E and F are two ebonite rods drilled

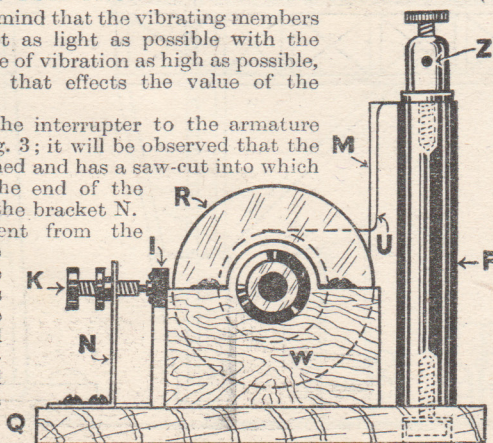


Fig. 4.—Details of the ebonite rods.

and tapped at either end. The rods are set vertically, their lower ends being secured to the baseboard by screws; the upper ends are equipped with terminals of the particular form shown, since these will be found most suitable for clamping the small pointed rods Z between which the sparks pass.

A springy strip of brass or copper U connects F with the slip-ring R, whilst the strip M connects E with the metal work of the armature, this virtually being the "earth" return.

In using the coil connect the terminals of the battery or accumulator to the terminals T, then adjust the contact points of the interrupter until the blade is vibrating at very high speed. The rods Z of the spark gap should be set at about $\frac{1}{16}$ in. beforehand; the gradual withdrawal of one of the rods will increase the length of the spark between the ends of the rods.

A SPARK COIL FROM A MAGNETO ARMATURE

By H. R. Langman

**A Useful Piece of Apparatus for the
Experimenter.**

The next procedure is to devise an interruptor mechanism to be actuated by the magnetic properties of the core.

Producing Sparks.

To produce a stream of sparks the primary current must be interrupted a great many times per second, and an electro-magnetically-operated interruptor will be very suitable for the purpose. The interruptor may be purchased complete from an electrical store, or may be built up after the manner depicted in Figs. 2 and 3.

A light brass bracket O has riveted to it a narrow piece of clock spring S which is slightly reduced in width by grinding near its anchorage to render the spring more lively.

Riveted to the outer end of S is a small soft iron disc or block I, which is attracted by the iron armature core whenever the latter is excited. The spring S must also be equipped with a contact J for engagement with a fellow contact H mounted at the end of a screw K, the latter being supported by the bracket N.

The interruptor mechanism is erected on the base-board so as to allow the block I to be drawn towards the armature face, the bracket N being set relatively to A so that the contact H of the screw K has broken contact with J. Small adjustments of the screw K will effect the best results, causing the spring S

to vibrate at a great rate; this results in very sudden interruption of the primary current. Since one end of the primary winding is earthed to the metal-work of the armature, then on each occasion that the block I touches A a spark may take place between the two. To eliminate this, glue a piece of paper to either block or the armature.

(Continued at foot of facing page.)

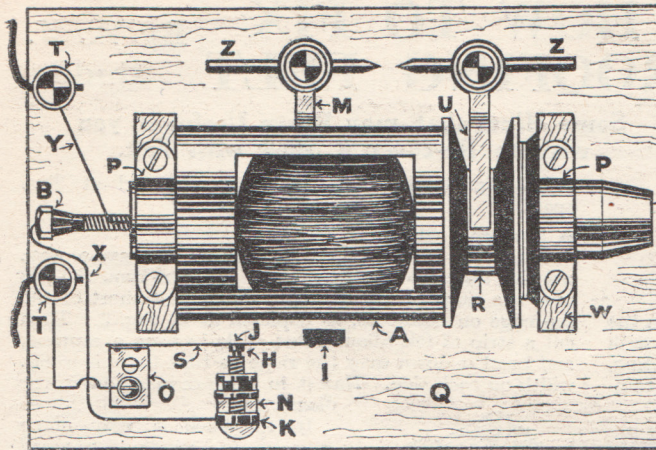


Fig. 3.—Showing the connections of the interruptor to the armature.

USUALLY good coils to yield sparks of short length are rather expensive to purchase, but the experimenter may often evolve a good coil from an old high-tension magneto provided neither the armature windings nor condenser are faulty.

Fig. 1 shows three views of a rotary armature, the "slip-ring" R being set in the vulcanite moulding M and in electrical connexion with the end of the secondary winding.

The condenser, with few exceptions, is of the tinfoil and mica variety, and for convenience is housed in the brass casing C, its purpose being to suppress the destructive sparking that would otherwise occur at the contact points; also it increases the inductive effect of the primary on the secondary winding. For the purpose of securing the contact-breaker in position a long screw B is introduced; the latter also serves as a connection between the finishing end of the primary winding and the insulated contact point of the breaker.

In converting the armature element to a spark coil it will be found convenient to cut off the portion L of the driving shaft close to the ball-race D, and then to support the ball-races D and E in wooden blocks W (Figs. 2, 3 and 4) so that the armature is well clear of the baseboard Q.

A couple of brass clips P will suffice to hold the armature member rigid, but before securing the clips set the armature with its core parallel to the baseboard.

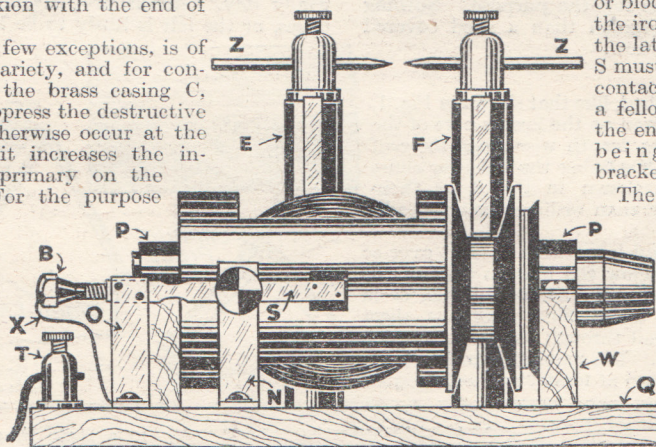


Fig. 2.—A side view of the spark coil.

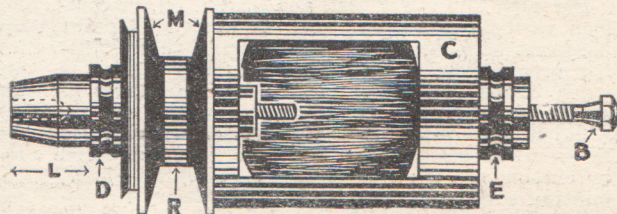
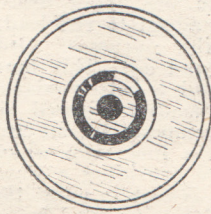
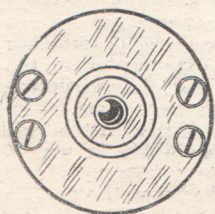


Fig. 1.—Three views of the rotary armature.

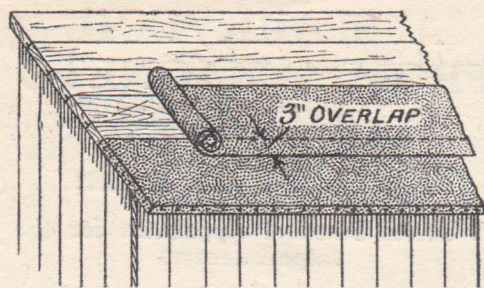


Fig. 1.—How to lay the felt on a lean-to shed.

AFTER completing a small shed or outhouse in the garden, it is the usual thing to cover it with tarred felt, or some form of bituminous sheeting, but unless this is laid properly the shed will not be rain-proof. The following notes should be helpful to those who have had no experience with this sort of work.

Roofing felt is supplied in rolls, and when cutting off the lengths required it is a good plan to use a wood batten, about 4ft. long, as a "straight edge" for guiding the knife, so that a straight clean cut is made. A lino knife with a curved point is excellent for the purpose. Nothing looks more untidy in a garden than a shed covered with pieces of felt cut anyhow.

Fixing Felt to a Shed.

In the case of a lean-to shed, like that shown in Fig. 1, the first strip should be fixed at the lowest part of the roof, and the other strips length wise along the roof until the top is reached. For fixing the felt, use short galvanized clout-nails, as shown in Fig. 2, as these hold the felt much better than ordinary small-headed nails.

After the first strip is laid in position bend it over so that it hangs about 1in. below the bottom edge of the roof, and nail into the edges of the roof-boards, as in Fig. 2. Lap each sheet about 3ins. over the sheet below, as in Fig. 1, and nail through the joint, spacing the nails about 2ins. apart. If a vertical joint has to be made, the felt should overlap at least 9ins., as indicated

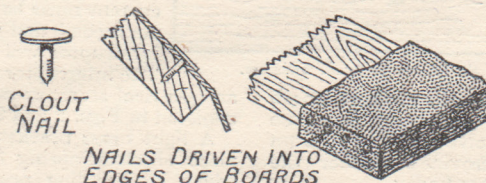


Fig. 2.—Details for fixing the felt.

Finally, do not leave work unfinished, especially on a windy day, without properly securing loose ends and edges, or the felt is likely to be lifted up and torn.

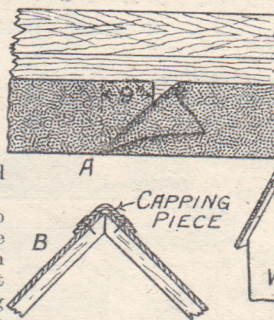


Fig. 3.—Fixing the felt capping over the ridge.

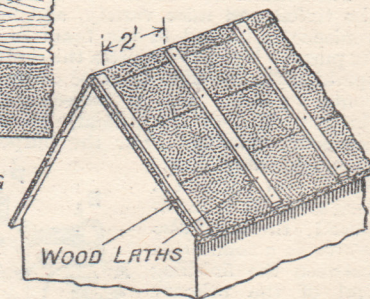


Fig. 4.—If the shed is exposed to the wind, fix laths on the roof as shown.

Heat-resisting Cements.

MIX up quite quickly 8 parts of pyrolusite crystals (manganese dioxide) with 10 parts of zinc oxide, and 2 parts of waterglass (silicate of soda, egg preservative). It is very rapid setting, and when once fused forms a glass-like mass of great adhesive power.

Red Lead Cement.

For pipe joints, red lead and linseed oil, or common varnish, is largely used. A linseed oil paint is almost as good, and in applying all these jointing preparations the steam or water tightness is much improved if it is put on with a gasket of string or other fibrous material. In the case of a flat or face-to-face joint which is drawn together by screws or bolts, the value of the job is enhanced by cutting out a paper insertion—a replica of the jointing surface, pierced with the necessary holes—this being smeared on both sides with the cement

GLUES, CEMENTS AND ADHESIVES.

in a state thin enough to be painted on. For joints which have to be broken, some pastes are made in which the red lead appears to be subordinate to a mixture of linseed oil and graphite (blacklead powder).

More Red Lead Cements and Putties.

Glycerine and red lead mixtures are very good for cementing metal objects into their sockets, and such like jobs. Raw linseed oil with resin, boiled up and added to red lead, makes another cement for similar purposes. Ordinary putty is whiting and linseed oil. This tends to dry up and come away, and a better mixture is to admix litharge (or red lead) to linseed oil with some lime. The lead decomposes the oil and combines with the lead to form a lime soap which is insoluble in water, therefore providing a waterproof mixture. When used, it is best to paint the surfaces of the crevice or fillet to be puttied up with linseed oil.

HOW TO FIX ROOFING FELT By A. J. Budd

Some Hints that may Prove Useful if you wish to Re-cover a Shed with Felt.

at A, Fig. 3, the fixing nails being spaced at 2ins. apart.

A Span-roof Shed.

With this type, lay the felt on in the same way, working upwards from the eaves. Do not bend the felt over the ridge of the roof, but cut it just short of the top edge on each side, as depicted at B, Fig. 3. Then cut a strip of felt about 12ins. wide to form a capping, and bend it down over the ridge so that there is a 6in. width on each side. Nail it in place as indicated in the diagram.

If the shed is very much exposed to winds, fix wood laths over the roofing felt running from the top to bottom of the roof, as in Fig. 4. The laths should be spaced 2ft. apart and can be coated with creosote before being fixed in place with galvanized screws or nails.

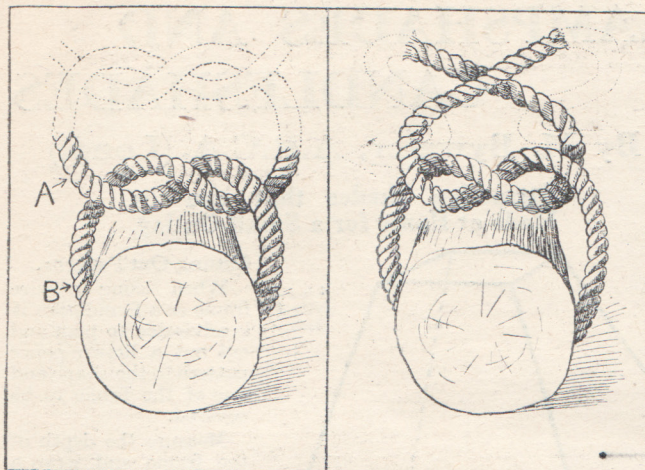
A CHAT ON BENDS, HITCHES, KNOTS, SPLICES, ETC.

By W. E. Marsh

The Second Article of a Series Dealing with Knots and How to Make Them.

of times; Fig. 4 shows how it appears after the end has been led through the bight six times and hauled taut, forming a six-fold knot.

A six- or eight-fold knot makes a nice hand-grip on a piece of one or two inch rope, also it is handy at the end of whip thong and for other purposes.



Figs. 7 and 8.—Showing the reef knot in operation.

KNOTS are of two kinds, those worked "on a single end" or "single part" as it is termed, and those worked with the strands of the rope.

We will begin with those worked on a single end, being the simplest to begin with, and the simplest of those is the overhand knot, shown at Figs 1. No more than a glance at the sketch is necessary to see how that is made, and a figure of eight knot is no more difficult (see Fig. 2).

The overhand knot is used daily by everyone at the end of twine or cord to prevent it from unlaying and other little purposes, though its name is unknown to the majority. The figure of eight knot is not so generally known or used, though it can be used for the same purposes.

The Footrope Knot.

At Fig. 3 can be seen the footrope knot, or double knot, before it is hauled taut; it is no more than the overhand knot with the end led through the bight a second time. The end can be led through the bight quite a number



Fig. 1.—An overhand knot.

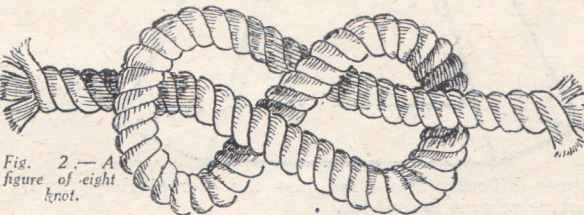


Fig. 2.—A figure of eight knot.

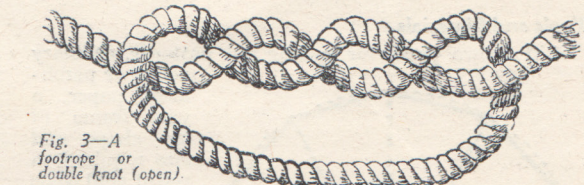


Fig. 3.—A footrope knot or double knot (open).

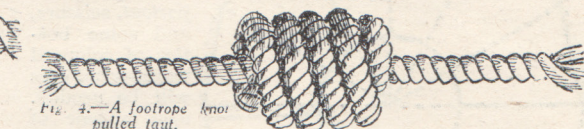


Fig. 4.—A footrope knot pulled taut.

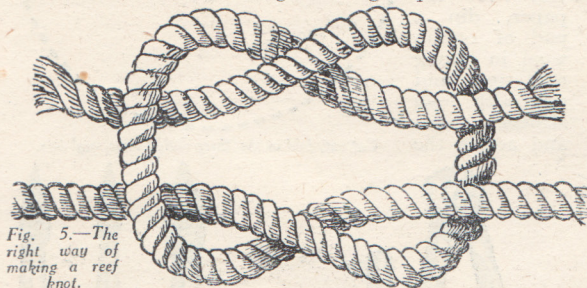


Fig. 5.—The right way of making a reef knot.

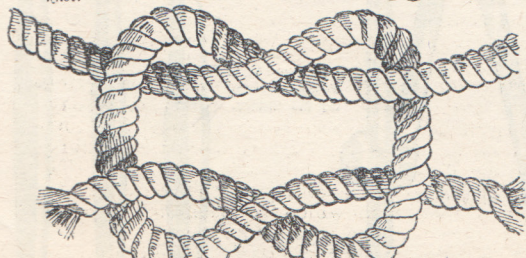


Fig. 6.—The incorrect way usually results in a knot generally called a "granny."

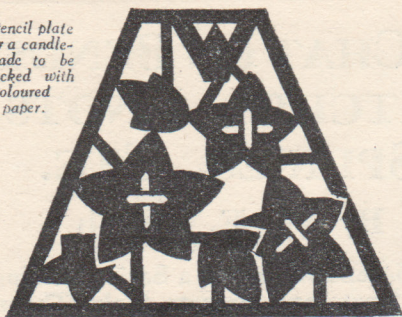
A Reef Knot.

Many people in attempting to tie a reef knot (Fig. 5) fail, and instead make a granny knot (Fig. 6), which will not take any strain without drawing.

Although it may hold after drawing a lot, it is difficult to cast off again, so therefore can be considered useless.

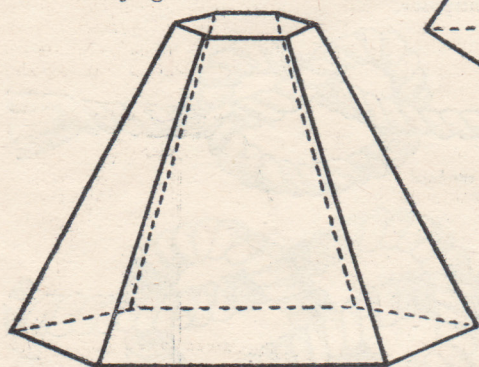
Both these knots are commenced the same way, i.e. with a half-knot (Fig. 7), but to make a reef knot, after having made the half-knot, take care that the ends are crossed the right way before making the second half-knot. If the left-hand end A. (Fig. 7) comes out over the standing part B (Fig. 7) and the right-hand end comes out under the standing part at the right, then the left-hand end must be crossed over the right-hand end before making the second half-knot, as in Fig. 8—follow the dotted lines.

Stencil plate
for a candle-
shade to be
backed with
coloured
paper.



VERY attractive shades can be made at home much less expensively than they can be bought. A well-chosen shade in general harmony with its surroundings will always add a sense of cosiness and restfulness to a room.

When buying shades there is some-

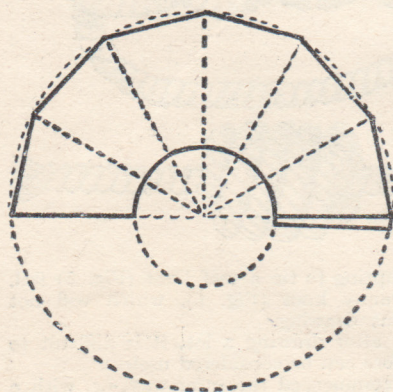


A hexagonal shade.

times difficulty in finding just the correct shape and colour scheme looked for.

Tools and Materials.

Stiff brown paper for cutting out patterns, ordinary stencil or parchment paper, a wire frame of the shape and size required, a roll of gold *passee* partout, scissors, and some bottles of coloured water-proof inks will be needed, also a pair of compasses when making candle-shades.



Make up in the same way as a four-sided shade.

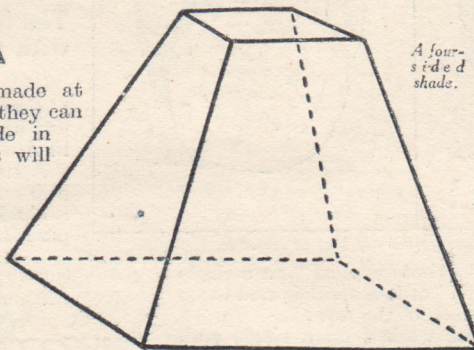
For the larger type of lampshade it is necessary to have a wire frame of the size and shape required.

Sable brushes, with good points, are better to use than camel hair brushes, to apply the colour with.

LAMPSHADES AND CANDLESHADES

By M. Bywater, A.R.C.A. (Lond.)

Attractive Shades that can be Made at Home for a Small Outlay.



A four-sided shade.

Cutting Out Patterns.

When using a wire frame as a foundation it is advisable to plan and cut out a brown paper pattern to the shape and size of the frame to be covered.

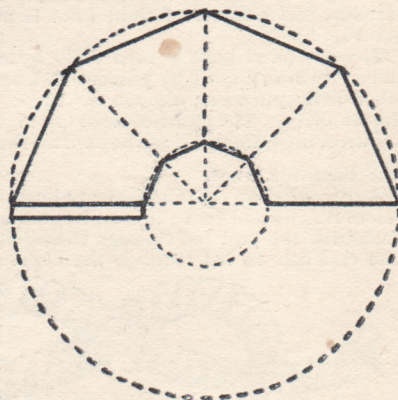
Measure the depth of the frame and wrap a strip of paper round its supports.

Then pleat into position round the top of the frame until it fits closely.

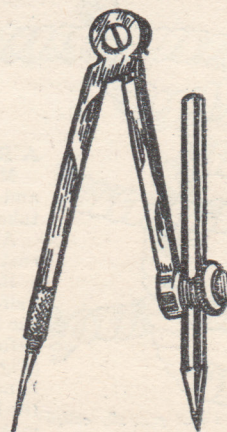
When this has been done and the pattern laid flat on the table it will be semi-circular in shape.

From this pattern cut out another semi-circle in stencil or parchment paper allowing about one inch to overlap where the join comes.

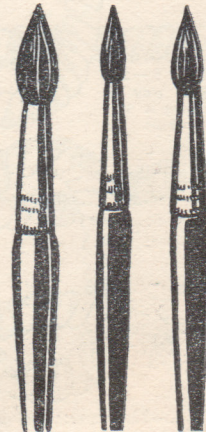
To add a slightly deeper tint to the paper, dip a pad of cotton wool in strong cold tea and rub with long strokes down and across the



Cut out, fold at the three dotted lines, and join.



Various tools used for designing the shades.



underside of the paper which is to be the inside of the shade when made up.

When this is dry the paper is ready for the design which should be drawn and painted in before putting the shade together.

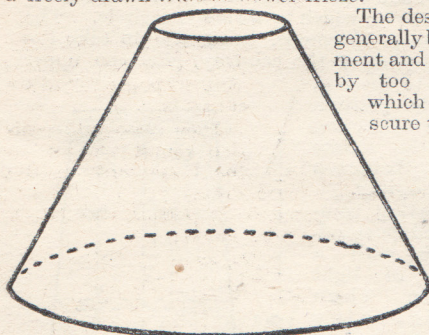
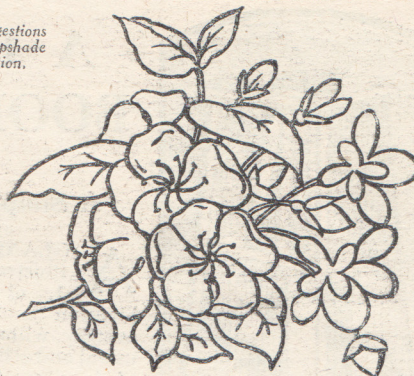
Design and Colour.

A light shade is seldom covered all over with pattern. Very simple designs are the most suitable.

There is usually either a deep border at the base of the shade, separate motives arranged at intervals or a freely drawn fruit or flower frieze.

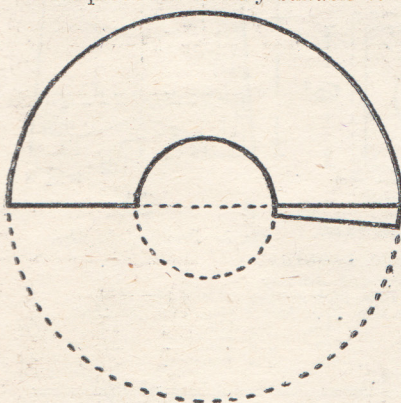


Two suggestions for lampshade decoration.



A candleshade cut from a circle and joined.

The colour itself should be pure, clean and transparent. Waterproof ink is very suitable to use.



The black lines show how the shade is made from half a circle, with an extra flap for joining.

design can draw a pattern on the shade without first making a design on separate paper.

To work out a design, transfer the pattern in dotted

The design should be generally broad in treatment and not hampered by too much detail which tends to obscure the passage of light.

A delicate black or brown ink outline will force up the colour and separate colours which are similar in tone.

Blues and greens lose their attraction by artificial light, and have a very dingy appearance unless, in the case of silk shades, they are lined up with white. Yellows, pinks, reds, and oranges, known as warm colours, give a very good light. Pink is considered the most becoming.

Transferring the Design.

Anyone with experience of

outline to a

piece of tracing or thin drawing paper.

This will enable you to space your design proportionately within a semicircular shape. Now take a small piece of smooth tissue paper and rub evenly over it with a very soft lead pencil (Grade 3B) until the entire surface is covered. Pin your tracing in position over the paper which is to be the shade, insert the tissue paper pencilled side downwards, and go over the drawing with a hard pencil.

Though preparing the tissue paper means a little extra labour than using carbon paper, it is safer to use. Unlike carbon, all errors in tracing can afterwards be removed.

The design is now ready

for painting. If the paper shows any signs of greasiness wipe it well with a wet rag before applying any colour. Allow the colour to dry before making up the shade. This should be neatly joined up with gum or a good white paste, and when dry, fixed over the frame and the top and bottom edges covered with gold *passee partout*.

Silk shades are usually made on a wire frame which is tightly bound at a long angle with pieces of tape on which to sew the silk. The edges look well when finished with gold galon.

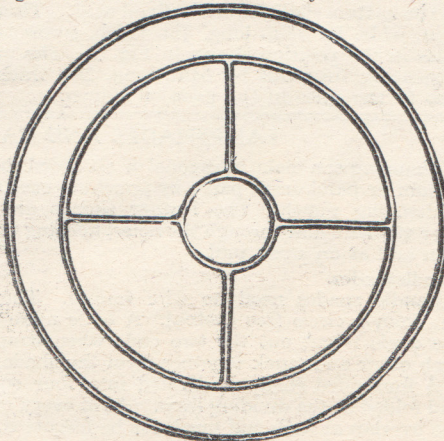
Deep fringe often adds to the beauty of a shade though it is not appropriate if a really strong light is desired.

Leather workers who have experience

(Continued on page 538.)

Left—A border design for a light shade.

Right—Plan of two-piece wire frame.



A USEFUL COMBINATION BOOKSTAND AND ASHTRAY

By E. Kerb

A Simple Piece of Furniture that any Handyman can Make.

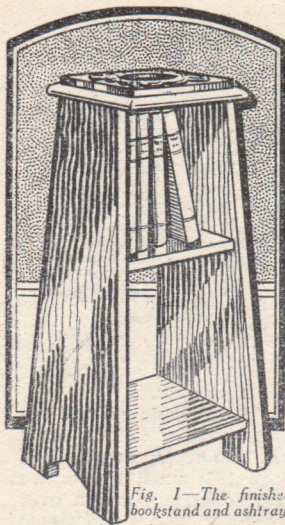


Fig. 1—The finished bookstand and ashtray.

make, all parts being simply butted together. Oak is a very suitable wood to use, and can be finished quite easily.

The Sides.

Commence by marking out the sides, as in Fig. 2, which measure 18in. high by 9½in. wide at the bottom tapering to 6in. at the top. Draw a line down the centre, from this mark 3in. each side at the top edge, and 4½in. either side at the bottom edge, connecting these points, which give the correct taper.

The shape for the feet at the bottom can be marked quite easily as shown. The dotted lines indicate the positions in which to screw the shelves. Cut this side in ¾in. thick wood, then lay it on a second piece of wood and mark round it carefully, this will give the outline for cutting the other side, also ¾in. thick.

The Top.

This is a square piece measuring 7in., ¾in. thick, round off the four edges as shown in the section in Fig. 2, screw this to the two sides ½in. from each edge as shown.

The Shelves.

The bottom shelf should be fixed next. This measures 8½in. wide, by 5½in. long, ¾in. thick, screw this to the sides in the position shown in Fig. 2. The upper shelf measuring 7in. wide by 5½in. long, ¾in. thick, screwed also to the sides in the position shown.

A GLANCE at the illustration in Fig. 1, of the combination bookstand and ashtray, will show a very useful and attractive piece of furniture, which can be made quite easily and cheaply. There are no difficult joints to

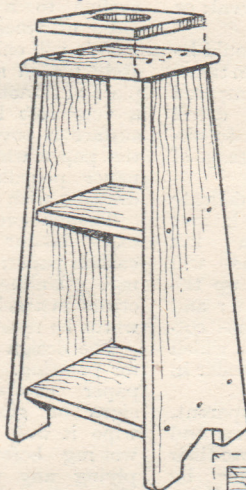


Fig. 3—Showing the various parts screwed together.

Fig. 3 shows the various parts screwed together in their relative positions, with the upper top ready for fixing, and Fig. 4 shows the upper top which is 6in. square, also ¾in. thick, having an opening in the centre to take a metal ash-tray, which may be purchased at any Bazaar or Store for a few pence. The centre for a circular

opening may be found by drawing diagonal lines, and where these cross each other is the point from which to strike the circle. The opening, of course, being cut to take the bowl part of the ash-tray, glue the upper top, to the top, in the position shown. Covering up the screws which fix the top to the sides.

Having completed the stand, finish with a coat of light stain then "Lightning Polish."

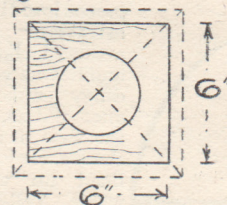


Fig. 4.—How the top is made.

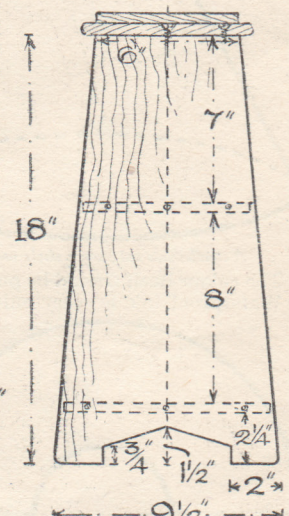


Fig. 2.—Details of the sides.

LIST OF WOOD, ETC. REQUIRED

Combination Bookstand and Ash-tray

Sides two pieces 18in. high x 9½in. wide x ¾in. thick.
Shelf (bottom) one piece 8½in. long x 8½in. wide ¾in. thick
" (top) " " 5½in. " x 7in. " " "
Top " " 7in. " x 7in. " " "
" (upper) " " 6in. " x 6in. " " "
and a Metal Ash-tray.

LAMPSHADES AND CANDLESHADES—(continued from previous page).

of thonging can make hexagonal or six-sided shades from vellum or parchment paper by punching each edge with a thonging punch. The leather thongs are threaded over the wire and through the holes, keeping the stitches firm and at an even pull.

Candleshades.

Candle shades need no wire frames. They can be cut from a circle (see sketch). A little more than half the circle is cut out the two ends when wrapped over each other and stuck together form the shade.

A four-sided shade is divided into four equal parts and folded at the dividing lines. As in every other case, the overlap at each end must not be forgotten.

If a hexagonal shade is required, the semicircle is first folded in half and each half divided into three equal parts.

Good effects may be obtained by making shades from ordinary stout tracing paper. The edges should be strengthened by pasting narrow strips of very thin cardboard along the top and bottom edge before joining up the sides.

Stencil cutting can also be introduced into candle-shade-making.

With a pair of compasses make a circle seven inches in diameter, cut out a shade the same as that described above, and on this cut a pattern in stencil form.

WHEELS FOR MODELS—No. 7

Model Locomotive Wheel Patterns.

IN his recently-published articles on "Foundry Patterns for Models," the writer purposely omitted to

By E. W. Twining

make more than passing reference to wheel patterns because he thought it more fitting that these should be included in the present series, so, from wooden cart and carriage wheels, we will pass on to those for railway rolling stock and locomotives and, dealing with the latter first, we will commence with the preparation of the foundry pattern.

Locomotive Wheel Patterns.

The method followed by most model engineers when

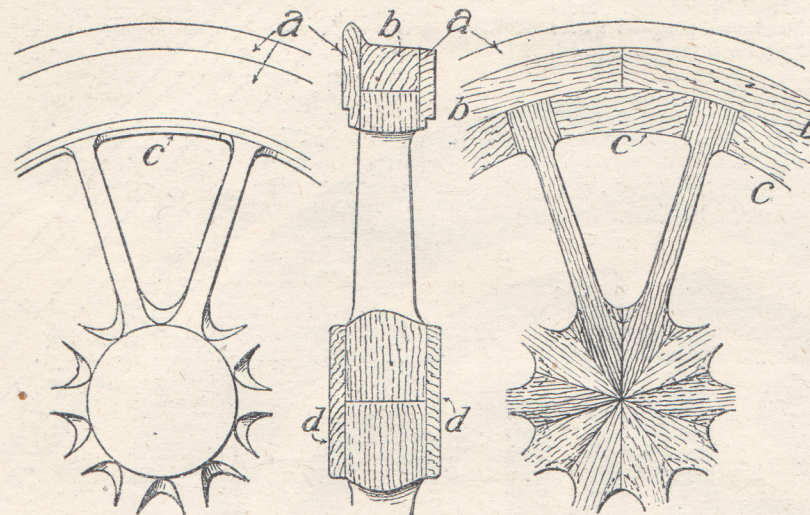


Fig. 26.—Foundry pattern for a locomotive wheel.

making patterns for their locomotive models is to plane up a flat piece of mahogany or other wood, mount it in the lathe, turn it to shape and afterwards pierce it for spokes with a fretsaw, finishing with chisels, gouges and glasspaper. Such a procedure is perhaps good enough for small wheels, if they are to be sent to the foundry at once, but for large patterns, or even small ones which are likely to be wanted again after a lapse of time, the method is unreliable, because wood, when cut to such a form, is unstable. Shrinkage is almost certain to take place and they will become oval, and possibly warp. If it is desired to cut small patterns from the solid, it will be much the safest plan to use the very best plywood which can be bought; gluing up several thicknesses, if necessary, and making sure that all the laminations of each thickness are thoroughly well glued. Unfortunately, in plywood, when cut into small pieces, there is often an insufficiency of glue and the consequence is that the laminations come apart.

Another good plan when making small wheel patterns is to buy some straight-grained mahogany veneer, the thickest obtainable, and make one's own plywood, by gluing piece after piece of veneer together, each with the grain running in a different direction, until the requisite thickness for turning the pattern is obtained. All superfluous glue should be squeezed out and the plywood, thus

made, should be dried under considerable pressure; after which it can be treated as ordinary wood except that the finishing of spokes will have to be done chiefly with files and glasspaper.

Built-up Patterns.

Large wheel patterns, that is to say, for locomotives of lin. scale and upwards, should in all cases be built up and one of the best forms of construction which can be adopted is that shown in Fig. 26. Here it will be seen that each spoke is a separate piece of wood, straight in the grain, mitred at the hub so that all the spokes meet at the exact centre of the wheel.

At the rim the spokes butt against a ring, b, which can be of as many segments as may be thought desirable. On a ten-spoke bogie or tender wheel the number of segments may be five, each one therefore will cover two spokes. Short felloes, c, fill in the spaces between the squared ends of the spokes and covering the sides of both felloes and rim segments there will be two rings of thinner wood, a a. To cover the mitring of the spokes at the hub two discs, d d, are glued on.

The turning of the pattern in the lathe should be done after building up and the final shaping of the inner faces of the felloes towards the hub should be done after the turning is finished. The surfaces to be turned will, of course, be the backs and fronts of hub and rim and the flange and tread of the tyre.

Loco. Driving Wheels.

The foregoing will apply to the making of patterns for all engines and tender wheels, but the driving and coupled wheels will require the addition of cranks and

(Continued on page 542.)

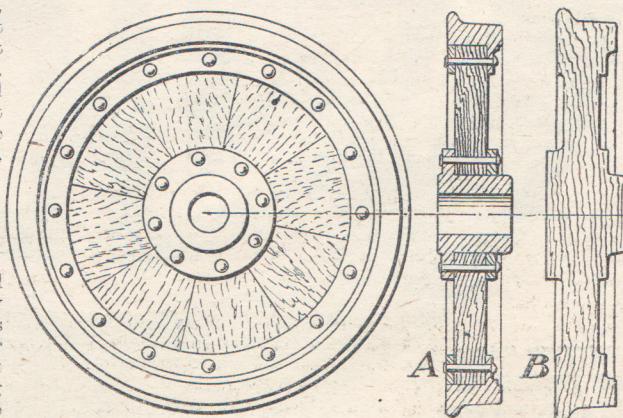
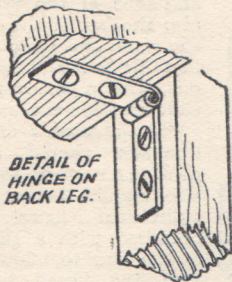


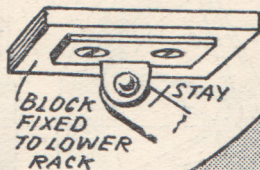
Fig. 27.—A railway carriage wheel.

THE ARROWS POINT
THE WAY OF THE
GRAIN.



DETAIL OF
HINGE ON
BACK LEG.

All orders by post should be addressed—
Hobbies Limited, Dereham, Norfolk, or
from the Hobbies Supply Stores:
London: 94, High Holborn, W.C.; 147,
Bishopsgate, E.C.; 83, Newington
Butts, S.E.11. Glasgow: 326, Argyle
Street. Manchester: 10a, Piccadilly.
Birmingham: 9a, High Street. Leeds:
10, Queen Victoria Street. Southampton:
25, Bernard Street. Brighton: 68,
London Road. Sheffield: 4, St. Paul's
Parade. Toronto, Canada: 54 Wellington
Street West.

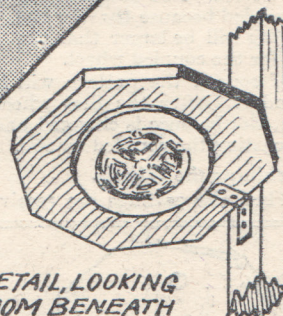


BLOCK
FIXED
TO LOWER
RACK

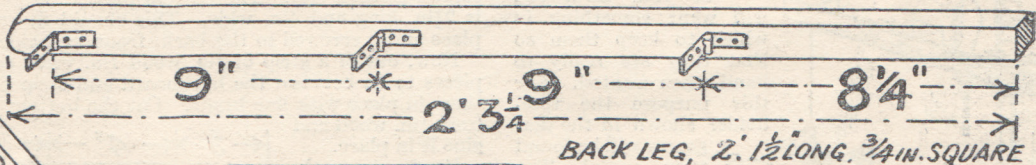
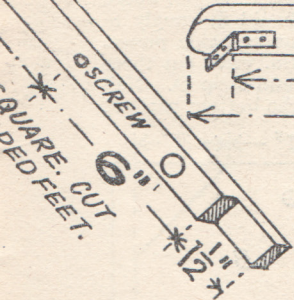
PLATE RACKS, HALF ONLY
OF ONE SHOWN, CUT THREE
3/8 IN. THICK AND FIX THE
PRETTERED PANELS UNDER-
NEATH TO THE DOTTED
LINE.



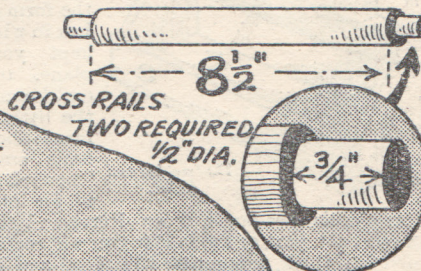
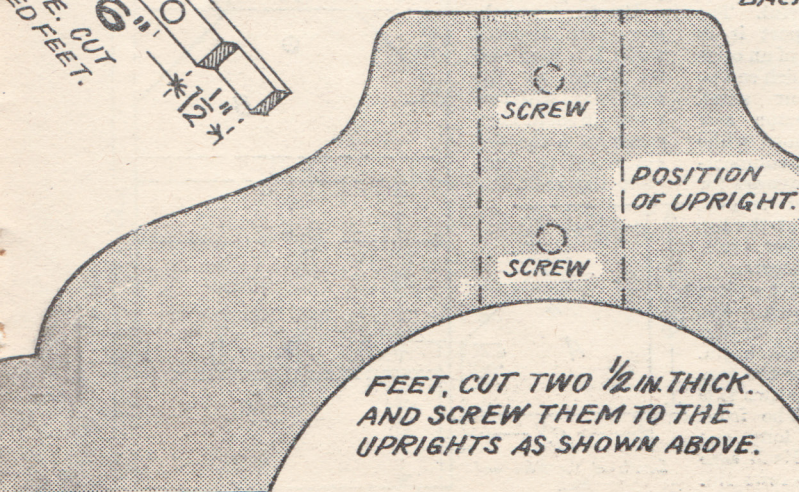
HINGE FIXED
UNDERNEATH



DETAIL, LOOKING
FROM BENEATH
PLATE RACK



BACK LEG, 2' 1 1/2" LONG, 3/4 IN. SQUARE



CROSS RAILS
TWO REQUIRED
1/2" DIA.

FEET, CUT TWO 1/2 IN. THICK.
AND SCREW THEM TO THE
UPRIGHTS AS SHOWN ABOVE.

WHEELS FOR MODELS—No. 7 (continued from page 539).

balances. The cranks will be the same size and shape for both driving and coupled wheels and so can be made a part of, and be built into, the wheel by modifying the inner ends of the spokes and adding the usual pear shape instead of the discs, d d. When we come to the question of balances, however, the case is different. On any coupled engine the coupled wheel balances are of different size from those on the driving wheels and all in a different position in relation to the cranks; so, in order to avoid the necessity for making two (or perhaps more) wheel patterns, the simplest way will be to make two balances each divided longitudinally, and of such form that they will be notched out to fit over the spokes in any position on the wheel. Two balances will be needed because that for the driving will be larger than the one for the coupled wheel.

Of course, the pattern will have to go twice to the foundry. After the first wheels, say the driving, are cast, the balance is changed and the pattern sent again for casting the coupled wheels.

Machining the Wheels.

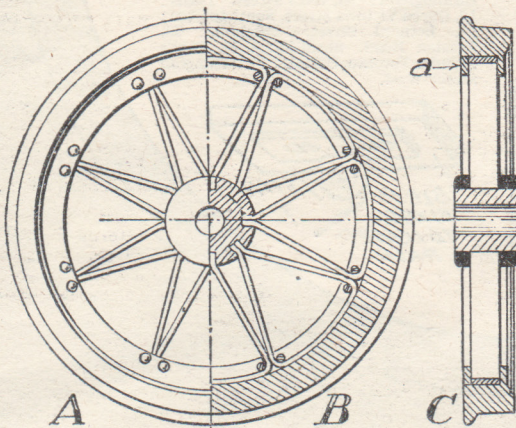
When the castings are received they are held either

in the chuck or on the faceplate of the lathe with the back face outwards and the back is machined. They are then reversed on the faceplate and the tread, flange and face of the tyre turned, also the face of the crank. In the same operation the hub is first drilled and then bored out, with a boring tool in the slide rest for the axle.

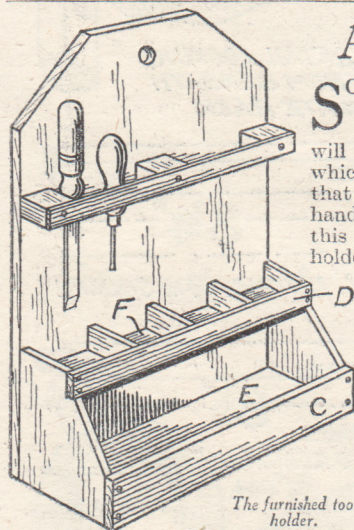
All the wheels of the same diameter should be bored dead to a uniform size and this size should be settled by a cylindrical gauge, like a mandrel, with a slight taper at the end to allow of entry into the bored hole. The axle ends will be turned to one or two ten thousandths of an inch larger than the bore and when the wheels are ready they are forced on to the axles either in a screw-press or a very large vice.

The axles should have been turned between centres and, when the wheels are on, the axles are again so placed in the lathe. A very light cut is then taken over the tread and flange of the tyre to ensure their absolute truth, finally finishing off with emery cloth.

(To be continued.)



No. 28.—A railway wagon wheel.



The furnished tool holder.

A HANDY TOOL HOLDER

SOONER or later, when you have a few tools of your own, you will want something in which to keep them so that they are ready to hand when wanted. For this purpose the tool-holder shown in the diagrams will be found very useful. The bottom part is in the form of an open box in which can be kept your small plane, tenon saw and hammer, while the little compartments above are for nails and screws. The rack at the top is for other tools,

such as chisels, bradaws, screw-driver and pincers.

For the back part of the holder you will require a piece of wood $\frac{3}{4}$ in. thick, measuring 15 in. long and 10 in. wide. This should be planed on both sides. Cut off the top corners with your tenon saw and then, with a $\frac{1}{4}$ in. centre-bit, make a hole on the centre-line near the top.

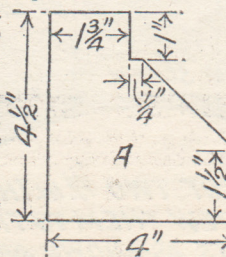
Next, out of a piece of $\frac{3}{4}$ in. wood, cut out the two side pieces to the sizes given in diagram A. The front strips C and D are pieces of $\frac{1}{4}$ in. wood 10 in. long, one being 1 in. wide and the other $1\frac{1}{4}$ in. wide. Each side piece, A, can be fixed to the back with three screws 1 in.

By "Ajax"

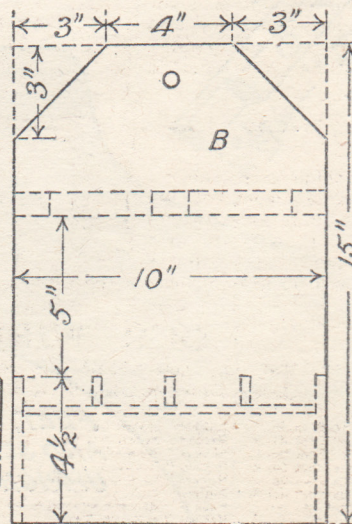
long, while the strips C and D can be fixed by two screws in each end. The bottom part, E, of $\frac{3}{4}$ in. wood, is $9\frac{1}{4}$ in. long and 4 in. wide. This should fit snugly in place and is screwed to the back, front and side pieces.

Now, out of a strip of $\frac{1}{4}$ in. wood 1 in. wide, cut three pieces to fit between the backboard and strip D. Nail them in place with fine brads. Cut the bottom part, F, from $\frac{1}{4}$ in. wood and glue it in place.

For the top rack, saw three blocks of wood 1 in. long and fix them to the backboard with two screws in each. Then screw on a strip of $\frac{1}{4}$ in. wood to complete the rack.



Details of the sides and back.



MAKING A WEATHERCOCK

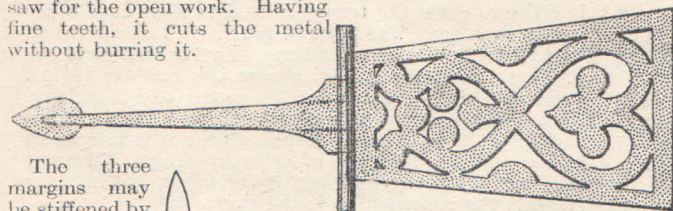
An Easily-made Piece of Apparatus that will Last a Number of Years

By W. S. Rogers

TO ensure accurate indications the weathercock should be made in accordance with scientific principles, the main consideration being that the vane be of ample area, the pointer small in section, and the pivoting free. This does not preclude giving it a decorative character as shown in the illustration Fig. 1.

The best material to use is zinc, which may be trusted not to corrode under weather influences.

Cut the vane from stout sheet zinc. Use a piercing saw for the open work. Having fine teeth, it cuts the metal without burring it.



The three margins may be stiffened by folding them over, say, $\frac{1}{16}$ in., but if stout sheet be used this would not be necessary.

To form the pointer use two strips of zinc, and beat them hollow so that when united they will have a section as shown in Fig. 2. Solder them together and insert the spear-head point, securing that also with solder.

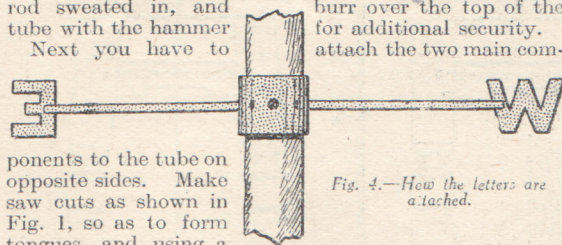
The Pointer.

The edges of the pointer at its wide end should be flattened on each side, leaving the centre of lozenge section as Fig. 2.

For the bearing, if possible obtain a piece of zinc tube about 5-16 in. internal diameter, or roll one up from sheet.

If either should involve difficulty, use brass tube. Plug the end as shown in Fig. 3 with a piece of brass rod sweated in, and burr over the top of the for additional security.

Next you have to



ponents to the tube on opposite sides. Make saw cuts as shown in Fig. 1, so as to form tongues, and using a mandril the same size as the tube, work each tongue to

circular shape, but each one in the opposite direction to its neighbour, so that the tongues when so fashioned form a channel in which the tube can rest to a depth of half its diameter. Then solder the two components to the tube.

It will be noted that the tongues of the pointer can be made to alternate with those of the vane.

This part of the work calls for care and precision, as strong, well-soldered joints are essential.

That much done, make sure that the pointer and vane lie in one plane. If not, the latter can be bent at the joint until the adjustment is correct.

Erecting the Weathercock.

The weathercock should be erected in an open position away from buildings and trees, and no better support can be provided than a sound larch pole, which should stand at least 20 ft. above ground level. This pole will taper, so it will be necessary to add the letters indicating the cardinal points before proceeding further. Make a short ferule of stout brass sheet, drill for the four arms, which may be $\frac{1}{16}$ in. rods of brass, and screw or sweat them in place. Drill also for two or more screws for securing the ferule to the pole. Cut out the letters from sheet zinc, insert them in saw-cuts made in the brass rods, and solder them securely.

It now remains to furnish the top of the pole. Drill a central hole and drive in a length of $\frac{1}{2}$ in. steel rod, which should be filed or turned to a blunt point at its top end, as shown in Fig. 3. Add a stout ferule at the top of the pole as shown, to prevent splitting.

Lastly assemble the weathercock before erecting the pole. First force in some motor grease, then a steel ball as used in bicycle bearings, and slip the weathercock over its pivot, after which the pole can be erected, set plumb, and the soil well rammed about its base. If the ground is of a loose consistency it may be necessary to guy the pole with wires.

The letters may be oriented by means of the compass after the pole is in place, but before the soil is compacted around its base.

A weathercock constructed in this manner will render service for many years without attention.

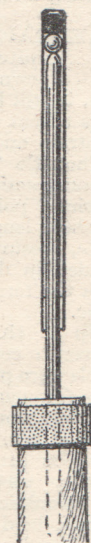


Fig. 3.—The top of the pole.

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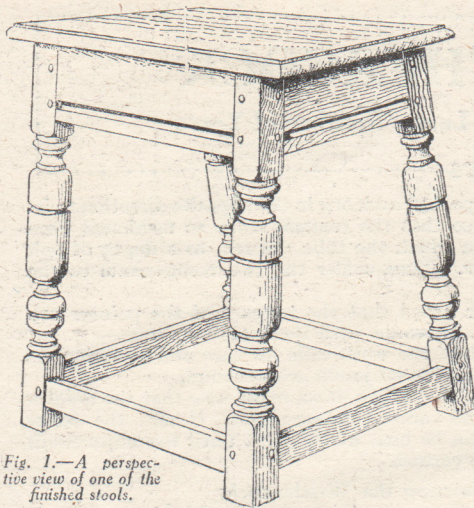


Fig. 1.—A perspective view of one of the finished stools.

PERHAPS the simplest form which any piece of furniture can take is that of the Stool, which was known in the 16th and 17th centuries, and, in fact, is still known, as the *Joyned Stool*, or *Joint Stool*. It is a seat of this kind which the writer proposes to illustrate and describe herein.

The title "*Joyned*" obviously indicates the method of construction, but it has been assumed that the term "*Joint*" points to the fact, and this is emphasized by its short length, that it was placed at the ends of the table, presumably for the use of the carver. It corresponded in design and dimensions, other than length, with the forms which were ranged on either side of the table.

Up to this time, that is to say, the end of the sixteenth century when chairs became more common, stools were probably in every room in the house; chests were frequently used as seats, but Joint Stools provided the only portable sitting accommodation before chairs were in general use. As the writer has explained in a previous article, all furniture prior to the seventeenth century was put together in simple, workmanlike manner with mortises and tenons, held together by the means of oak dowels; screws and glue of course being unknown.

The Materials Required.

Good dry oak is essential with as much figure as possible on account of its having a lessened tendency to warp. This is due to the fact that it is cut from the tree in a direction parallel with the medullary rays and radially from the heart of the tree or nearly so.

If the reader can obtain English oak, which is the strongest and most durable of this species of timber, so much the better.

Joint Stools were plain in form with simple turned legs which were usually splayed for greater stability. The frieze, or top rails, were sometimes roughly shaped and carved with conventional strapwork or grooving.

A perspective view of such a stool is given in Fig. 1, whilst Fig. 2 shows a

TWO JOINT STOOLS OF THE SIXTEENTH CENTURY

By G. E. Twining

Two pieces of artistic furniture that any handyman can make.

side elevation, and end elevation and part plan of the top. A section of the bottom rails and leg is also given in order to show the tenons mitred to clear each other in the mortises. The top rail tenons will also have to be treated in the same manner. In the first stool the legs are turned from 1½ in. square oak and are 19½ in. long, whilst in Fig. 3 they are 2 in. square and 22 in. long. This sketch shows a side elevation and end view of a slightly differently proportioned stool; it is somewhat higher and the legs are of different design. The top rails are cut away on their lower edges, but in other respects the construction is the same.

The Top.

The top is fastened down to the rails by what were known as tree nails. These are made of oak with tapered heads, and are driven through holes in the top into corresponding holes in the rails, such holes having a diameter slightly smaller than that of the nail.

Stools were also made with hinged tops, and if the reader desires to do so he can quite well peg a bottom on to the under side of the upper rails, thus converting the top of the stool into a shallow

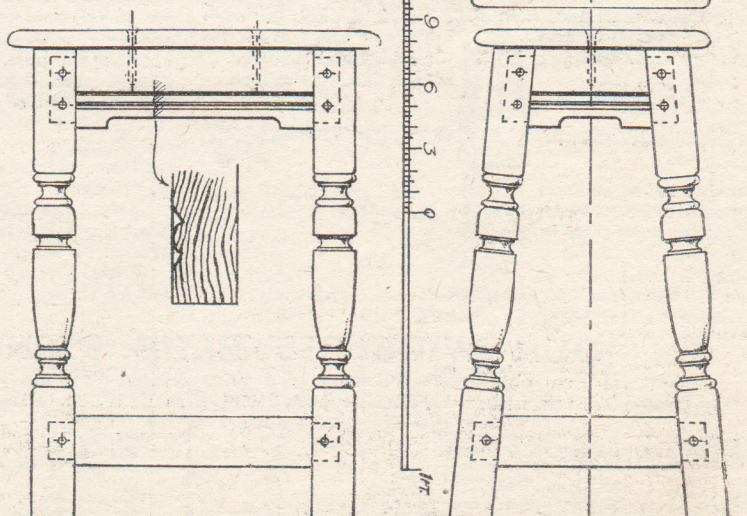
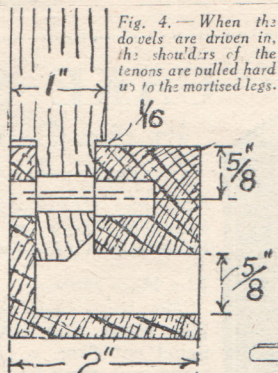


Fig. 3.—A side, end, and top view of a slightly different proportioned stool to that shown in Fig. 2.

chest. On account of the legs being splayed the reader must mark out carefully for cutting the tenons on the



ends of the end rails; he must see that the angles for the shoulders of the tenons are correct, otherwise bad joints will result; they should be sealed from the end elevation in the drawing Figs. 2 and 3.

The best way to cut shoulders accurately is to carefully chisel a V-shaped cut against the shoulder line, this will then form a channel for the saw.

Holes for the Dowels.

As the writer has stated in a previous article, it is better where no glue is used in the mortise and tenon joint, to drill the holes for the dowels in the mortises separately from the tenon. The centre of the dowel holes in the tenon can then be marked and drilled a fraction of an inch, say 1/16 in., nearer the shoulder, and so when the dowels are driven in, the shoulders of the tenons are pulled hard up to the mortised legs. (See Fig. 4.)

The grooving in the upper rails needs no explaining; it is quite simple and can be done with a chisel and gouge.

If, after reading the foregoing description, the reader is sufficiently interested to construct either of these stools, he should refer back to the writer's article in HOBBIES on a 15th Century Trestle Table, in which is described a method of reproducing not only the style of workmanship of the old makers, but also the effects of wear and tear and darkening of the oak sustained through the passage of time. These things are dealt with in full detail, including a simple means of fuming without the use of an air-tight chest.

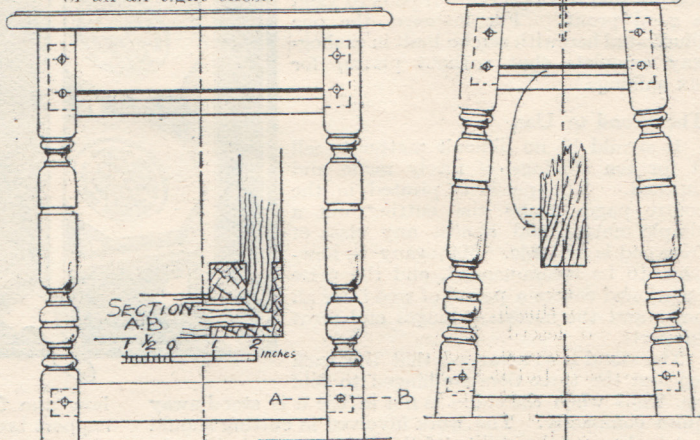


Fig. 2.—A side, top, and end view of one of the stools.

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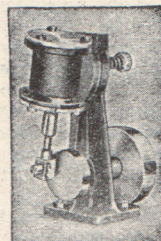
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A FOLDING From Patterns Given

AMONG the many useful articles which the fretworker and amateur carpenter can make are cake or fruit stands, which serve an excellent purpose for handing round delicacies at afternoon tea, and are articles which can often be readily sold amongst one's friends to yield a good profit. For instance, the one illustrated herewith can be built in mahogany complete (but without plates) for six shillings.

The Wood to Use.

It should be no difficult matter to sell it for ten shillings, if nicely made and finished. The patterns printed in the centre pages make the cutting out a simple matter, and almost any class of fretwood is suitable. Mahogany is, however, to be recommended, and the price mentioned covers a parcel of wood for all parts and the necessary hinges and strut supports.

The stand is so arranged that the back leg and the three tiers are hinged to fold up. Thus when the stand is not in use it is stood away quite compactly. The work involved in cutting should not be beyond the ability of the amateur, and the only interior fretwork portion is in the small circular discs glued on the centre of the plate platforms. Most of the work is in the fitting of the various parts to ensure that the platforms and leg are so fixed that they fold correctly and without straining the hinges.

The Two Long Legs.

The two upright legs (2ft. 8½in. long) should be cut first from ¾in. square stuff, with a halving joint at the bottom 1½in. long and, of course, ¾in. deep. Mark off on these legs the position of the screws holding the octagonal platforms, and bore the holes for the cross rails at the top and bottom. These cross rails are pieces of ¾in. dowel rod, the end of which is sunk slightly for the distance of ¾in. The distance between these sinkings is 8½in. as shown by the detail on the pattern sheet. Keep it a little outside 8½in. or the legs will bind on to the plate racks. Be sure to bore the holes in the legs opposite each other, or the rails

Next get out the two feet, the shape shown, in ¾in.

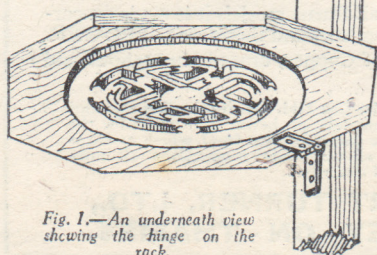
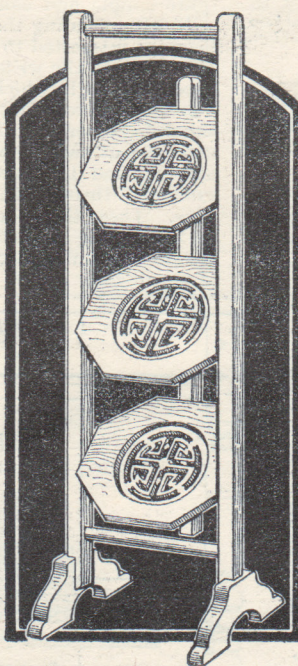


Fig. 1.—An underneath view showing the hinge on the rack.

will twist. cutting them to wood, with the grain running crosswise for strength. Screw and glue the legs on, and then fit the two cross rails in the usual holes at the top and bottom.

The back leg is 2ft. 3¼in. long from ¾in. square



CAKE STAND in the Centre Pages

stuff, and strap hinges are fixed at the distances shown on the diagrams. Get these central all the way down the leg.

The Plate Holders.

The three plate racks are octagonal in ¾in. wood, and with a fretted centre panel cut from a piece of 3/16in. plywood and glued beneath to form a recess in the circle cut in the main rack. These three racks, when complete, are pivoted to the legs by means of long screws driven through. These should be 1½in. round-headed. They are included in the fittings.

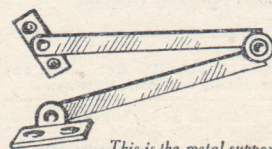
See that the plate rack does not bind too tightly between the legs, to ensure that they are perfectly horizontal. The back leg with its hinges can now be fixed, the flanges being screwed on to the underside of the plate rack, as shown in Fig. 1.

In order to hold the stand securely when the plate racks are flat, a special strut hinge must be fixed between the lowest rack and the back leg. A detail of it is given at Fig. 2, where it can be seen how the fixing is made, and the way in which the support breaks when the cake stand is closed up.

A Block Support.

It is impossible to fix the flat part to the underside of the fretted rack, and, in consequence, a small block of ½in. wood to take two ¾in. screws should be glued in place. Put this block of wood on first, a little beside the centre point, and then test the support in its proper position, marking out the holes for the screws with a pencil when the correct one has been found.

The completed stand should be finished off with stain to bring it down to the same colour, and then a coat of french polish or Lightning Polish put on and allowed to harden in. Two or three coats may be required to bring up a bright surface, but the result will be well worth the little extra trouble of finishing. The cross rails being in white wood will have to be stained down several times to get them the same shade as the rest of the boards.



This is the metal support hinge with its two swivel plates for fixing with screws.

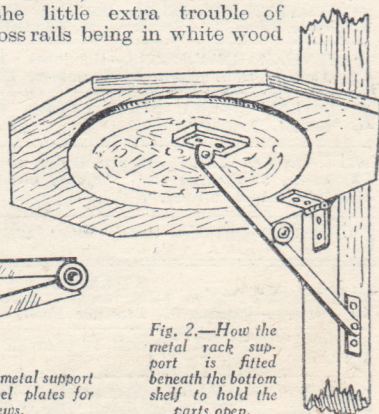


Fig. 2.—How the metal rack support is fitted beneath the bottom shelf to hold the parts open.

MATERIALS REQUIRED

Parcel No. 1948 contains planed mahogany for all parts for 4/9 (postage 9d.). Hinges, support and screws are 1/3 the set, and suitable plates are 1/- each, or 3/9 for three.

A NOVELTY CIGARETTE BOX

The house and bird slide along the base, and when it goes back a cigarette is left lying in the groove! A decided novelty, the wood for which is sold by Hobbies for all parts for 9d., or 1/3 post free (Parcel 166). Anyone with a fine saw can make it.

HERE is a quaint little automatic cigarette delivery house which will appeal to all our handymen and especially our fretworkers, as all the parts are cut out with the fretsaw. The cottage which forms the container for the cigarettes will slide up and down along the baseboard, and in so doing leaves a cigarette in the groove formed by the small blocks attached to the base portion.

The Base.

The article is easily made, and the small amount of decorative work required in painting in the windows and door is simply done with a few poster paints or

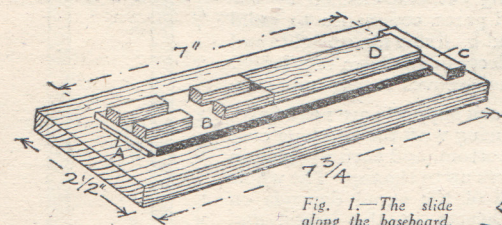


Fig. 1.—The slide along the baseboard.

ordinary oil paints. The illustration at Fig. 1 gives a view showing how the base, which is the most important part, is made up, and it is this part which will receive first consideration.

The whole article may be made from sycamore, as this wood is tough and will, as regards the sliding motion, wear well, and, therefore, last longer than a soft wood. Upon a base of $\frac{3}{8}$ in. thick wood measuring $7\frac{1}{2}$ in. by $2\frac{1}{2}$ in. is glued an upper base made up of two pieces—A and B in Fig. 1. These pieces are 7 in. long, A being $1\frac{1}{2}$ in. wide, and B $1\frac{1}{2}$ in. wide. See these measurements are the same throughout, and that they are glued together with an equal margin each side.

It will depend upon these two pieces how smoothly the house pushes backwards and forwards. Glue the pieces to the base. Then, at one end, glue on another piece D on the top of B, the former being half the length of the latter—viz. $3\frac{1}{2}$ in. long by $1\frac{1}{2}$ in. wide and $\frac{3}{8}$ in. thick. The piece C at one end is required as a stop for the end of the house to rest against. Four $\frac{3}{8}$ in. blocks are next glued on in the positions shown, in alignment with piece D. The length of each piece is $1\frac{1}{4}$ in.

The House Itself.

The house is made from the six pieces shown in Fig. 2, the measurements being taken direct from this diagram for marking out the various pieces. The angle of the roof slopes is 45 degrees, so the two pieces forming the

roof meet at a square edge, and are, therefore, easily glued together.

Before assembling the house see the several pieces meet accurately and then note when gluing them up that there is a gap at the lower edge of each of the gable ends to allow the base and its upper pieces to slide inside as it were. The section (Fig. 3) shows how the various pieces appear when the sloping partitions have been added inside. These sloping partitions run the length of the house and are $1\frac{1}{2}$ in. wide. To fit the walls they must be chamfered and also shaped on the lower edge to slide clear of the base fillets.

At the extreme lower inside edges of the side walls of the house glue on pieces of $\frac{1}{2}$ in. square stuff, planed down from waste $3\frac{1}{16}$ in. wood. These act as guides for the house, and need to work freely between the two sections A and B.

For the roof of the house the two pieces will be measured off both the same length, but one piece will be $3\frac{1}{16}$ in. less in width than the

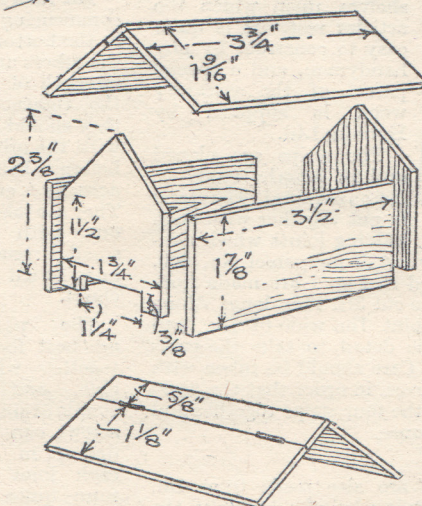


Fig. 2.—A general view of parts of the house.

other slope. The wide piece will be $1\frac{1}{2}$ in. and cut through as the lower sketch shows in Fig. 2. It is then hinged with a pair of $\frac{1}{2}$ in. hinges. Chamfer the top edges of the walls to fit the roof. In gluing the latter to the end walls fix only one slope and the portion of that which holds the hinges.

The chimney is made from two pieces of $\frac{3}{8}$ in. wood cut to an angle and glued together as the sketch (Fig. 4). A flat piece is glued to the top to form the cap. The bird is cut from $\frac{3}{8}$ in. wood and the outline may

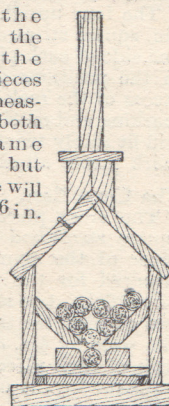
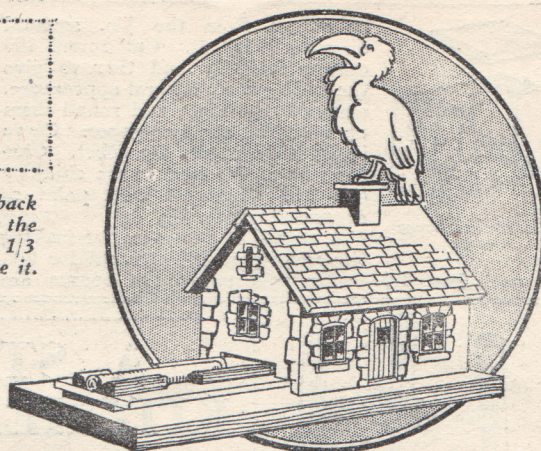


Fig. 3.—A section of house and bird. Note the cigarettes in position.

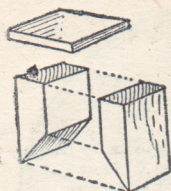


Fig. 4.—The chimney parts.

or post free, 1/3.

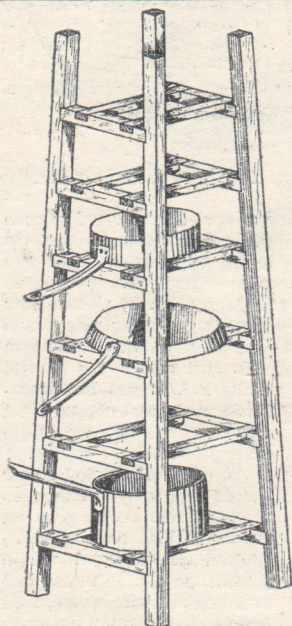
be drawn from the $\frac{1}{2}$ in. squared diagram (Fig. 5). Cut round the outline carefully and then to give the bird a more natural appearance, carve off the edges and round them up with file and sandpaper. Carve in the feathers also for effect. Glue the feet of the bird to the chimney cap and finish off with paint as suggested previously.

A parcel of sycamore for making this novelty may be bought for 9d., In this parcel the boards are

cut roughly to the sizes required, but the two narrow slides of $\frac{1}{4}$ in. are obtained from odd pieces of waste wood of any material at hand in the worker's possession. Complete the base dead black or some suitable dark colour. The roof may be covered with tile paper or may be just painted red and lined up to indicate the tiles. Suitable tile paper is obtainable for 2½d. a sheet and the house can be covered with brick paper if so desired at the same price.



Fig. 5.—How to draw the bird.



A STAND FOR KITCHEN UTENSILS

Quite a simple thing to make from four upright legs and a few cross strips. Just the thing for the handyman to make.

QUITE a useful and strong stand to hold kitchen utensils, such as saucepans and frypans, can be made entirely of stripwood. It consists, as shown, merely of four tapering uprights with a number of open shelves upon which the articles rest. It is quite easy to construct by any handyman, and a special parcel of the necessary wood is supplied by Hobbies Ltd.

The strips are planed and in lengths ready to cut as required. The stand is put together with open halving joints which sim-

plifies the work considerably. Ask for parcel No. 600.

The four uprights indicated in Fig. 1 are made from 1 in. square stripwood, and are cut 3ft. 11 in. long. Along one side of each piece cut a joint 1 in. wide by $\frac{1}{2}$ in. deep in the positions given in the detail, to take the cross pieces of the rack supports. Care should be taken with marking and cutting the grooves, in order that the parts will fit nicely together. Lay the four strips together and mark across all of them at once.

The Cross Bars.

The cross pieces (Fig. 2) are also made from 1 in. square stripwood cut to varying lengths to make the taper of the stand itself. Two pieces 7½ in. long are required for the top, and these are followed by two pieces 7½ in., two at 8½ in., two at 8½ in., two at 9½ in., and two at 9½ in. for the bottom. Here again, an open joint 1 in. wide by $\frac{1}{2}$ in. deep is cut a distance of 1 in. from the ends of each piece on one side. These are to take the supports for the utensils.

The Racks.

The rack supports themselves are made from 1 in. by $\frac{1}{2}$ in. stripwood. Two pieces 9 in. long are required for the top, and then two at 9½ in., two at 9½ in., two at

10½ in., two at 10½ in., and two at 11½ in. long for the bottom. There are no joints in these, as they fit into the joint cut in the cross struts.

Having cut and cleaned up the required parts, commence to build the stand by fixing the uprights and cross pieces in the form of a ladder with the grooves facing upwards.

The rack supports are next fixed, commencing with the two long ones at the bottom, and then working in the others up to the top. The whole strength of the stand depends on the tightness of the joints, and they should be carefully tested each

before being actually cut. They are taken out with a small tenon saw and a chisel.

The parts are best fixed together with glue, and a couple of small screws can be driven in at each joint to form quite a strong job. The stand should be given a light coat of stain to form a finish, and then can stand in some convenient spot to take the various

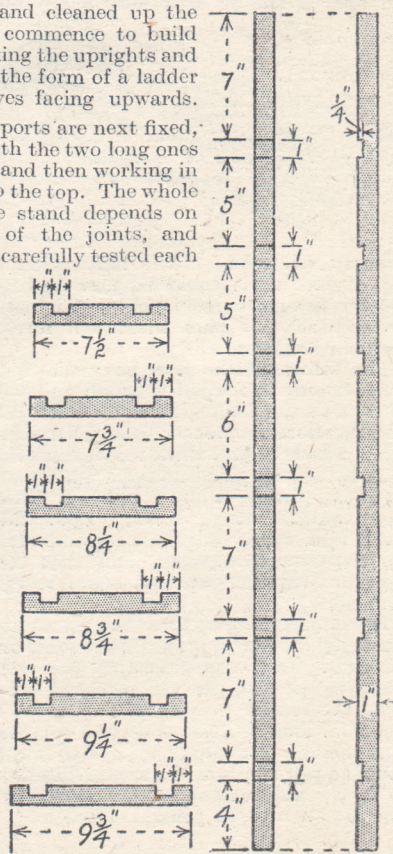


Fig. 2.—How the supports are cut.

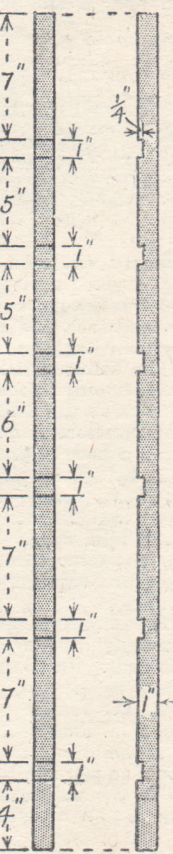


Fig. 1.—The four corner posts.

IMPORTANT NOTICE! All correspondence intended for the Editor or Advertisement Manager **MUST** be addressed to "Hobbies," Messrs. Geo. Newnes, Ltd., 8-11, Southampton St., Strand, W.C.2.



As every collector knows, the first country to follow the lead of England in adopting adhesive stamps was Switzerland, and it was in March, 1843, that the canton of Zurich produced the two black stamps which are now so much sought after. The design was the same for both, and consisted merely of a large numeral indicating the value on a background of



The first stamp ever issued out of England, Zurich, 1843.

crossed lines. The name, Zurich, is on a label at the top, though different inscriptions appear at foot. On the lower value, 4 rappen, are the words "Local Taxe," which signifies that it was for local use only; the 6 rappen is inscribed "Cantonal Taxe," indicating that it could be used for letters to any part of the canton. It will be seen, therefore, that in common with the early issues of so many countries, the stamps were, in reality, only locals.

Unwatermarked Paper.

Unlike the British stamps which inspired the issue, they were printed on unwatermarked paper by the lithographic process, and so would have been fairly easy to imitate if any malefactor had conceived the idea of attempting to defraud the revenue in that way. Though of this there is no evidence, later generations of scoundrels have taken advantage of their primitive style to forge the stamps wholesale for the confusion of collectors. The issue lasted for several years, but the stamps have always been rare, especially the 4r., which is catalogued at £70. The 6r. is much commoner, and is quoted at only £8. Nevertheless, they have both received the unwelcome attention of the forgers, perhaps more so than any other stamps. Some of the imitations are really dangerous, and can only be detected by an expert, though as a rule they are poor.

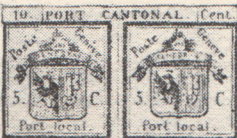
THE SWISS CANTONALS

By P. L. Pemberton

One that is often met with has a numeral in each corner, representing the date, 1843—a curious flight of fancy considering that there are no such figures on the genuine stamps. The forgeries are found in nearly all really old school-boy collections, for they made their appearance almost as soon as stamp collecting began in the early sixties. To prevent disappointment, in case any reader should happen to find genuine specimens of the stamps in old collections, I must make it clear that the prices quoted above are for very fine specimens, with a clear margin all round the design, and free from all blemishes such as tears, creases or thinning of the paper, however slight. Any such defects in these, or, for that matter, in any other stamps, not only brings the prices down to about a tenth, but renders them very unsaleable even at that.

Stamps for Local Cantonal Use.

Before the general issue for the whole of Switzerland appeared in 1850, other cantons followed Zurich's example and issued stamps for local cantonal use. Geneva was only six months behind Zurich, for the famous "double Geneva" was issued on 1st, October 1843. This curious stamp consisted of two reproductions of a similar design, printed side



The famous "double Geneva," which could be used as a whole or in halves.

by side, which could be used as a whole on letters addressed to any part of the canton of Geneva, or could be halved, and each half used for a town letter. Each half was officially known as a "coat of arms," for the design represents the Arms of Geneva. The complete double stamp is one of the great rarities of Europe, for though it was in issue for some six months the public did not take kindly to it. As in England and most other countries the practice hitherto had been to leave the little matter of the payment of postage to the addressees; this was a point of etiquette, for the prepayment of a letter was held to cast a doubt on the financial position of the recipient, and the good bourgeois of Switzerland were loth to insult their friends. It is for this reason that, though 120,000 of the stamps were printed, they were not all used, and to-day a fine specimen of the double stamp fetches anything up to £200, though a half stamp is much commoner, and is quoted at only £40.

The "Basel" Dove.

Another attractive Swiss cantonal stamp is the Basel, which is popularly known, on account of its design, as the "Basel Dove." This was a much more finished production than either the Zurich or the Geneva issues, for it was printed in three colours, carmine, black and blue, and bears in the centre an embossed white dove with a letter in its beak. In spite of this elaboration it has been forged almost as extensively as the Zurich and Geneva stamps, and specimens of such imitations, many of them extremely deceptive, are found side by side with the other Swiss impostors in most vintage collections. Fine specimens of the genuine article are quoted at £40, for though it was in issue from 1845 (July) to 1847, it was cold-shouldered by nearly all really nice minded people. So little, in fact, was the boon appreciated, that the stamp was withdrawn before the general issue for Switzerland appeared, and the canton relapsed into its old habits for a period of three years, during which the temptation to offer the insult implied by prepayment of letters was removed.



The beautiful "Basel Dove" of 1845.

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A DRAUGHTS OR CHESSBOARD

A GREAT many of our readers must be players of draughts, chess, or similar games, and will therefore welcome the opportunity of making this full-size draught-board. Moreover, it is planned for use with the chessmen shown in these pages, cut in fretwood, a week or two ago. The board is shown finished above, and as can be seen, it is merely composed of a chequered surface with eight squares along each side fitted to a baseboard, which, in turn, is surrounded by moulding.

The Chequer Board.

The baseboard should be in plywood to prevent warping or twisting, but the squares themselves must be in light and dark wood to provide the necessary contrast. If you can get hold of some dark walnut, this is excellent used in conjunction with whitewood. Failing that, whitewood can be used throughout, with the dark squares made black by treating them with egg-shell black. This is a special preparation which has a dead flat colour, and is easily applied with a brush. The size of the checkers is $1\frac{1}{2}$ in. square, which will accommodate most of the large

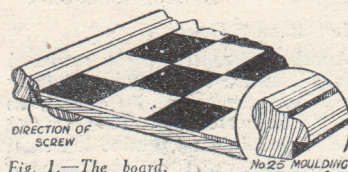


Fig. 1.—The board, base and edging.

draughts or chessmen in use.

A baseboard, 1ft. 2 $\frac{1}{2}$ in. square and $\frac{1}{2}$ in. thick, is first cut, and fitted into the rebate of grooved tray moulding, such as is illustrated. This groove just takes the thickness of the wood, and the moulding is mitred at the corners and screwed on from underneath, as indicated by the section at Fig. 1. The baseboard must, of course, also be glued in place, and four small circular feet can be added as shown in the same diagram. These feet are the No. 20 toes supplied by Hobbies.

The moulding provides the fancy edging to the board, and the overlay checkers are fitted inside this framework. They should be of $\frac{1}{16}$ in. wood cut quite true, thirty-two being white and thirty-two black. Each is $1\frac{1}{2}$ in. square, and one must be particularly careful to get the edges straight so that they may fit perfectly in place.

A good plan is to get five strips of light wood and four strips of dark, Fig. 2.—The checkers are cut from alternate strips like this.

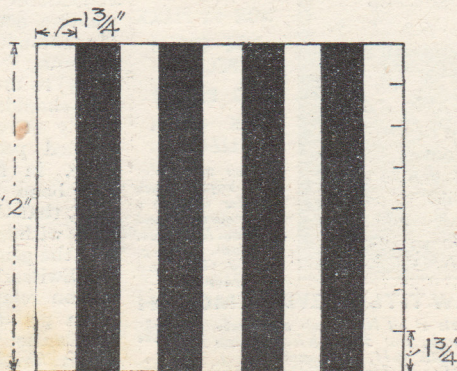
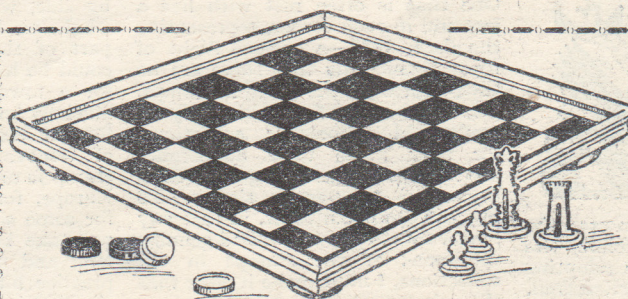


Fig. 2.—The checkers are cut from alternate strips like this.



each measuring 1ft. 2in. long but exactly $1\frac{1}{2}$ in. wide. Lay the strips flat edge to edge, and glue up in alternate order as shown at Fig. 2. Then, from one end to the other, mark off $1\frac{1}{2}$ in. spaces and saw across dead straight. If the squares are then slid along sideways alternately, we get the result shown at Fig. 3—the

complete chequered board.

There are, of course a few projecting pieces of the white boards, but these can easily be cut off. The completed checkers are fitted into the hollow frame of the tray moulding, and glued firmly in place and weighted down until the glue is set.

Another simple plan is to get a plain piece of plywood and put an edging of No. 17 moulding round. This is shown in Fig. 4 as a square base moulding without a rebate, so the checkers will have to come inside the frame. Mitre the moulding and glue it round the edges to make a frame as before. This provides a hollow square, and the actual size of the checkers is obtained by dividing each side of this square into eight portions.



Fig. 4.—Another style of edging.

To Suit Your Own Game.

The size of the whole board can, of course, be varied, providing that the hollow frame for the checkers themselves is divided in this way. As the edging of the moulding is fairly tall in this instance, the checkers can be cut from 3/16 in. or even $\frac{1}{4}$ in. wood. The outside edge of the moulding is glued flush with the baseboard, and as before, small feet are added in each corner. The completed board is finished with polish, or given a coat of varnish and allowed to harden before it is brought into play.

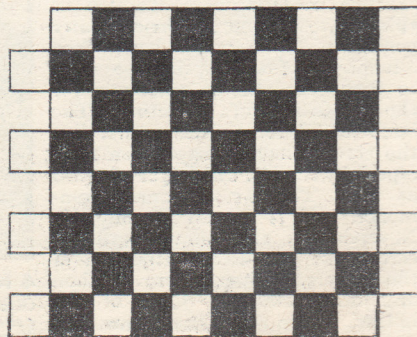
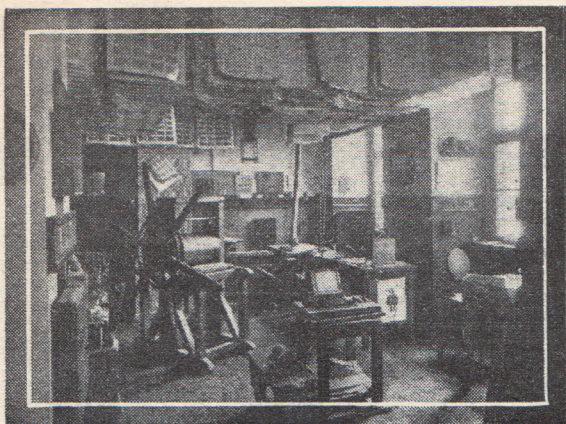


Fig. 3.—When sawn across and pushed over the parts are as shown here.



A workroom in the Altenburg card factory.

ALTENBURG, in Thuringia, is only a small city, but its name is known wherever Germans live. For it is not only the seat of Germany's largest and oldest playing-card factory, which celebrated its hundredth anniversary on November 16, 1932, but it is also the home of "Skat," the card game which Germans love so greatly that not even the growing popularity of bridge has weaned its followers away. Bridge remains confined more or less to certain classes, but "Skat" is played alike in the villas of the rich and in the homes and gathering places of the humble. No village is so small that it has not its "Skat" club. The traveller in a German train will often see men playing, using a suitcase for a table, and occasionally one will find a notice fastened to the door of a train compartment: "Third man wanted." For the game is played by three players; if there be a fourth, one sits out once in each round.

Cards With Different Names and Pictures.

In Northern Germany what are known as "French cards" are used, the same as in France, England, America and the Scandinavian lands, but in Middle and Southern Germany one finds the old German cards, with quite different names and pictures. There are "Schellen" (bells) instead of diamonds, "Eicheln" (acorns) instead of clubs, "Grün" (green, with leaves) for spades, and "Rot" (red, with hearts) for hearts.

The origin of "Skat" is not definitely known, but it is certain that it was first played in Altenburg, which has thus come to be known as "the Skat city," as Ströbeck, near Halberstadt, is known as "the chess village." As long ago as the 16th century—playing cards have been known in Germany since 1300—the word "skat" was used to designate the laying aside of several cards in the then popular game of taroque. Two cards are also laid face down in the middle of the table in dealing for "Skat," which is played with a deck of thirty-two cards, and it is probable that the name of the game is a corruption of the Italian "scartare," which means to lay aside.

In the present form, however, "Skat" is only 120 years old. It grew in the 18th century out of the old game of "Schafskopf." Karl Christian Adam Neefe (1774-1821), city clerk in Altenburg, introduced into the old game the laying aside of two cards as in taroque, the lower one of which determined the trump. About 1815 to 1817 the differentiation was made between playing with these cards open or

ALTENBURG : THE HOME OF "SKAT"

An Increasingly Popular Game that is Played with a Deck of Thirty-two Cards.

covered, trump was designated by the successful bidder, and the different values were assigned to the "matadors" (jacks or knaves).

The First Large Playing-card Factory.

The game was developed and refined rapidly, and spread from Altenburg to all parts of Germany and surrounding countries. The first large playing-card factory was established in 1832, and in 1882 the first "Skat" problems appeared in a magazine. The first German "Skat" congress was held in Altenburg in 1886, and it issued standard rules for Germany, which are followed generally wherever the game is played, and which are altered only by decree from Altenburg. A "German Skat court" has been established to settle all disputed points. The thirteenth "Skat" congress will be held again this year in the home of the game.

Friends of "Skat" have even erected a monument to their favourite game in Altenburg, the only one of its kind in the world. On a high pillar sit the four jacks, engaged in an obviously hotly contested game. And in the old palace once occupied by the Dukes of Sachsen-Altenburg a playing card museum exists, also the only one of its kind in the world. It contains an extensive collection of old copper engravings, steel and woodcuts, dealing with the history of cards. There are historic playing cards from many centuries, many of them of great artistic value, and primitive cards made by soldiers in the trenches during the World War. The collection was got together by an Altenburg friend of "Skat," who devoted thirty years to the task.

A unique exhibit is the equipment of a playing-card factory of the 18th century, including presses, stamps, etc. The museum was materially enlarged in connection with the centenary of the Altenburg card factory.



The famous "skat" painter Pix. When he recently celebrated his 50th Birthday the city feted him like a national hero.



Let Your Editor Help You. Address your letters and queries to The Editor, "Hobbies," Geo. Newnes, Ltd., 8-11, Southampton Street, Strand, London, W.C.2, enclosing a stamped addressed envelope. All letters and queries must bear the full name and address of the sender.

Mental Nut No. 53 Result.

BOOKS this week are awarded to the following three readers, whose solutions of the above Mental Nut were the first correct ones to be opened: Mr. A. Carney, 82, Shakespeare Street, C-on-M, Manchester; Mr. E. Cocker, 34, Loxley New Road, Hillsbro', Sheffield; and Mr. J. W. Liddell, 24, Vicarage Grove, Wallasey.

The "Bi-range Three."

NEXT week's special radio issue will contain illustrations and wiring diagram for our latest receiver, the "Bi-range Three." It has been specially designed for cheapness, without sacrificing efficiency. It will receive rather more than forty stations on the medium and the long waves, and is quite selective.

The "Fury Four."

THOSE readers who require something more ambitious on which to roam the radio world cannot do better than make my latest receiver, the "Fury Four." Full constructional details, together with a free shilling blue-print, are given in this week's *Practical Wireless*. This is a receiver which has been specially produced to get over the selectivity problem, and at the same time receive most of the British and European stations. In spite of the amazing results which have accrued from the strenuous tests through which the "Fury Four" has passed, it may be made for between £5 and £6. For the first time in the history of radio journalism, the set carries with it the guarantee of the designer and Editor, for I undertake with the "Fury Four" to give free advice to every reader of *Practical Wireless* who builds this until the set functions in the same manner as mine.

Next Week's Free Design Sheet.

THE design sheet next week is for a model fire-engine—something novel and original which will appeal to all those readers who like miniatures of existing pieces of machinery.

Bear in mind that your suggestions for design sheets are always welcome, and receive careful consideration.

The "Wireless Constructor's Encyclopædia."

If you are a wireless enthusiast and would like to obtain a copy of my "Wireless Constructor's Encyclopædia," you may do so under the special arrangements given in this week's *Practical Wireless* (3d. every Wednesday from all newsagents).

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This encyclopædia contains 400 pages and 490 illustrations, and it deals with the entire field of wireless construction, operation, repair, and overhaul in alphabetical order. The price of the volume normally would be 8s. 6d., but regular readers of *Practical Wireless* are enabled to obtain it for a nominal sum by complying with a few simple conditions. By the way, I should like to record that a data sheet, printed on stout manilla board and having holes punched so that they may be filed, is given free every week with *Practical Wireless*.

QUERIES & REPLIES.

Blackening Tin Plates.

Cleanse the metal from all grease and oil, and then immerse in a bath composed of butter of antimony 1 part, chloride of copper 2 parts, and water 32 parts, O. H. (Beverley). When the desired colour has been obtained, wash and dry the plates or articles, and then apply a coat of colourless lacquer. Another method is to cover the articles with black opaline, which gives a colour coating that is lustrous and waterproof, is readily applied, and becomes hard if exposed for a short time to a gentle heat. Opaline is largely used on the cans containing meats and fruit, etc.

Renovating Rush-seated Chairs.

Thoroughly scrub the whole of the woodwork and seating with warm soap-suds, to which a piece of washing soda has been added, then allow to dry, K. V. (Leigh-on-Sea). The rush seats cannot be properly bleached in position, but they can be stained in arc green. To do this, dissolve 1oz. of green aniline dye in 1 quart of hot water, then add $\frac{1}{2}$ gill of strong vinegar; give the seats two or three coats, according to the depth of colour required. When dry, make a size of 1oz. of glue to 1 quart of water, and lay on a thin coat with a brush or sponge. The woodwork can be well rubbed down with a piece of old-hair-seating or fine worn glasspaper, the light parts touched up with stain to match, and two or three coats of brown hard spirit varnish, stained to the required tint, applied.

Substitute for Celluloid.

Gelatine is a very good substitute for celluloid, L. P. (Boston). It can be made into thin films which are perfectly transparent and nearly colourless. It is, however, somewhat brittle, and is not waterproof. These defects can be remedied by adding a small quantity (say $\frac{1}{2}$ to 1 per cent.) of glycerine, which renders it pliable, and by dipping in formaldehyde, which renders the material insoluble in water. The material known as "viscose," which is prepared from cellulose by patented process, can also be obtained in beautiful transparent films. This is not inflammable in the same sense as celluloid, and would be suitable for replacing the latter for many applications.

Black Wax for Phonograph Records.

Melt together 36 parts of carnauba wax, 12 parts of beeswax, 25 parts of sodium stearate, and 27 parts of aluminium oleate; then add a little black to colour the mixture, and mould, P. G. (Bury). The wax may be made harder by increasing the amount of carnauba wax, but this will render the records more brittle.

Mahogany Varnish.

Take 1 pint of methylated spirit, 4oz. of orange shellac, 1oz. of resin, and 2oz. of gum sandarach. Crush the gum before adding the spirit, frequently shaking up till well dissolved; carefully strain into another bottle, V. Q. (Bournemouth). In a smaller bottle dissolve one pennyworth of bismarck brown in $\frac{1}{2}$ pint of methylated spirit; this makes a strong red stain. A few drops added to the varnish gives the mahogany colour.

Polish for Calf Kid Boots and Shoes.

The best polish for calf kid boots and shoes is white of egg, K. H. (Ammanford); this should be kept until it is stale and forms a liquid, not a jelly. Ordinary blacking should not be used for calf kid boots. Another polish can be made by boiling pieces of calf kid, and adding a little gelatine, a very small portion of glycerine, and yellow soap; simmer up again, then strain and put in bottles.

Crystal Set.

Instructions for making a Crystal Set appeared in our issue dated February 6, 1932, G. B. (Greenock). Back issues cost 3d. each. We also supply a blue print of this crystal set for 6d.

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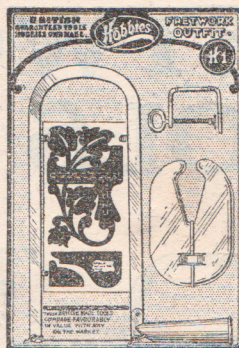
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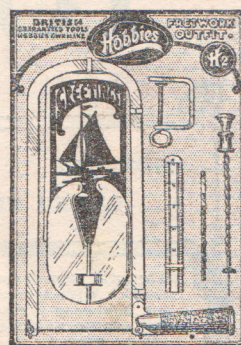
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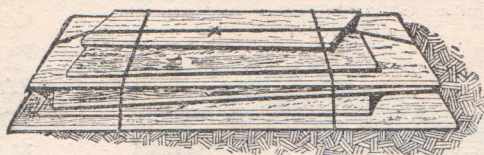
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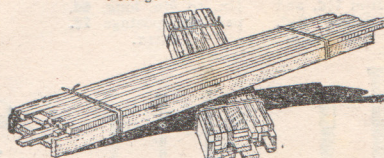


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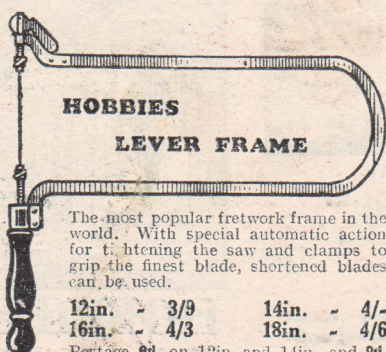


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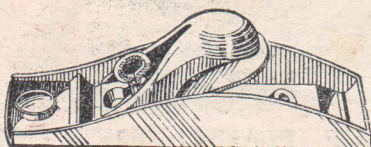
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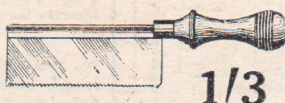
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THE FAVOURITE CUTTING TABLE

Made in cast steel, in two pieces. Easily put together to form a rigid table, with real V for fretcutting. No sharp edges to damage the work.

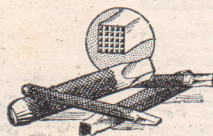


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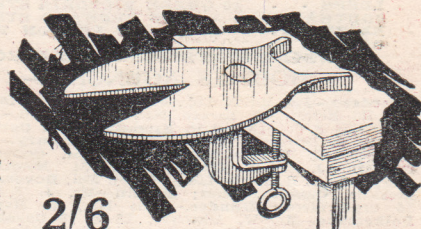
SEE THE
HOBBIES
CATALOGUE
FOR FULL
RANGE OF
TOOLS AND
MATERIALS

MATting TOOLS

For making fancy ground or patterns on any woodwork, strong, well made.



3pt., 4pt. & 9pt., 9d.



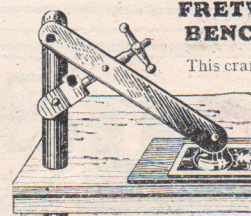
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Post 6d.

Hobbies own make.

A SMALL SAW

For cutting moulding, strips and small carpentry work this is the tool you need. Strong and well made, with teeth which actually will cut, and comfortably shaped handles. Postage 4d. extra.



FRETWORKER'S BENCH CRAMP

This cramp is planned and made by Hobbies specially for fretwork. It holds the wood flat to the bench for sandpapering, cleaning, filing, etc. Postage is 9d. extra.

Price 3/-

SMALL SCREWDRIVER

A tool necessary to the fretworker. Measures 5in. and has a 3in. shank and narrow head for small screws, which the ordinary driver will not fit. Well made with comfortable polished handle.



Hobbies own make, ask for the No. 5 Screwdriver. Postage 2d. extra.

9d.

